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# SESSIONAL PAPERS

VOLUME 8

FOURTH SESSION OF THE EIGHTH PARLIAMENT

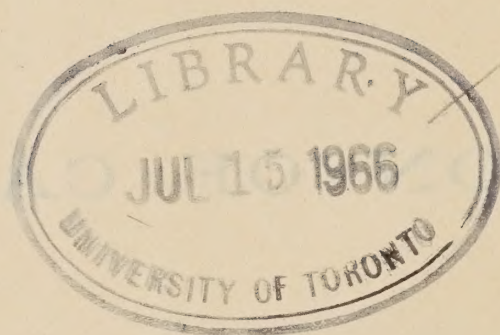
OF THE

DOMINION OF CANADA

SESSION 1899







1091865



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(This volume is bound in two parts.)

- 1. Report of the Auditor General, for the year ended 30th June, 1898. Presented (in part) 7th April, 1899, by Hon. W. S. Fielding. Presented, complete, 26th April, 1899.

*Printed for both distribution and sessional papers.*

CONTENTS OF VOLUME 2.

- 2. Public Accounts of Canada, for the fiscal year ended 30th June, 1898. Presented 23rd March, 1899, by Hon. W. S. Fielding. .... *Printed for both distribution and sessional papers.*
  - 2a. Estimates of sums required for the service of Canada, for the year ending on the 30th June, 1900. Presented 24th April, 1899, by Hon. W. S. Fielding.
- Printed for both distribution and sessional papers.*
- 2b. Supplementary Estimates for the year ending 30th June, 1899. Presented 12th June, 1899, by Hon. W. S. Fielding..... *Printed for both distribution and sessional papers.*
  - 2c. Supplementary Estimates for the year ending 30th June, 1900. Presented 18th July, 1899, by Hon. W. S. Fielding..... *Printed for both distribution and sessional papers.*
  - 2c. Further Supplementary Estimates for the year ending 30th June, 1900. Presented 7th August, 1899, by Hon. W. S. Fielding..... *Printed for both distribution and sessional papers.*
  - 3. List of Shareholders of the Chartered Banks of the Dominion of Canada, as on 31st December, 1898. Presented 30th March, 1899, by Hon. W. S. Fielding.
- Printed for both distribution and sessional papers.*
- 3a. Report of dividends remaining unpaid, and unclaimed balances in the Chartered Banks of Canada, for five years and upwards, prior to 31st December, 1898. Presented 12th April, 1899, by Hon. W. S. Fielding..... *Printed for both distribution and sessional papers.*

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- 4. Report of the Superintendent of Insurance, for the year ended 31st December, 1898.
- Printed for both distribution and sessional papers.*
- 4a. Preliminary Statements of the business of Life Insurance Companies in Canada, for the year ended 31st December, 1898. Presented 10th April, 1899, by Hon. W. S. Fielding.
- Printed for both distribution and sessional papers.*
- 4b. Abstract of Statements of Insurance Companies in Canada, for the year ended 31st December, 1898. Presented 25th May, 1899, by Hon. W. S. Fielding.
- Printed for both distribution and sessional papers.*



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- 5. Report of the Department of Trade and Commerce, for the fiscal year ended 30th June, 1898. Presented 19th April, 1899, by Sir Richard Cartwright.  
*Printed for both distribution and sessional papers.*
- 5a. Special Report on Trade between Canada and the United States ; for use of the International Commission, Quebec ; August, 1898..... *Printed for both distribution and sessional papers.*

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- 6. Tables of the Trade and Navigation of Canada, for the fiscal year ended 30th June, 1898. Presented 20th March, 1899, by Hon. W. Paterson..*Printed for both distribution and sessional papers.*

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- 7. Inland Revenues of Canada. Excise, etc., for the fiscal year ended 30th June, 1898. Presented 21st March, 1899, by Sir Henri Joly de Lotbinière.  
*Printed for both distribution and sessional papers.*
- 7a. Inspection of Weights, Measures, Gas and Electric Light, for the fiscal year ended 30th June, 1898. Presented 21st March, 1899, by Sir Henri Joly de Lotbinière.  
*Printed for both distribution and sessional papers.*
- 7b. Report on Adulteration of Food, for the fiscal year ended 30th June, 1898. Presented 21st March, 1899, by Sir Henri Joly de Lotbinière.... *Printed for both distribution and sessional papers.*
- 8. Report of the Minister of Agriculture, for the year ended 31st October, 1898. Presented 11th April, 1899, by Hon. S. A. Fisher.... *Printed for both distribution and sessional papers.*
- 8a. Report on Canadian Archives, 1898. Presented 1st June, 1899, by Hon. S. A. Fisher.  
*Printed for both distribution and sessional papers.*

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- 8b. Report of the Director and Officers of the Experimental Farms, for the year 1898. Presented 15th May, 1899, by Hon. S. A. Fisher .....*Printed for both distribution and sessional papers.*
- 8c. Criminal Statistics for the year 1898..... *Printed for both distribution and sessional papers.*

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- 9. Annual Report of the Minister of Public Works, for the fiscal year ended 30th June, 1898. Presented 27th June, 1899, by Hon. W. S. Fielding..*Printed for both distribution and sessional papers.*
- 10. Annual Report of the Department of Railways and Canals, for the fiscal year ended 30th June, 1898. Presented 23rd March, 1899, by Hon. A. G. Blair.  
*Printed for both distribution and sessional papers.*

CONTENTS OF VOLUME 9.

- 11. Annual Report of the Department of Marine and Fisheries (Marine), for the fiscal year ended 30th June, 1898. Presented 7th April, 1899, by Sir Louis Davies.  
*Printed for both distribution and sessional papers.*
- 11\*. Report of the Commissioners appointed under the Order in Council of the 11th January, 1898, to inquire into the alleged grievances of the Pilots of the district of Montreal, etc.  
*Printed for both distribution and sessional papers.*
- 11†. First Annual Report of the Geographic Board of Canada, 1898.  
*Printed for both distribution and sessional papers.*
- 11a. Annual Report of the Department of Marine and Fisheries (Fisheries), for the fiscal year ended 30th June, 1898. Presented 30th March, 1899, by Sir Louis Davies.  
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*Printed for both distribution and sessional papers.*
- 11c.** Report of the Canadian Lobster Commission, 1898. Presented 29th June, 1899, by Sir Louis Davies.  
*Printed for both distribution and sessional papers.*
- 11d.** Report of Harbour Commissioners, &c., 1898. .... *Printed for both distribution and sessional papers.*
- 12.** Report of the Postmaster General, for the year ended 30th June, 1898. Presented 22nd March, 1899, by Hon. W. Mulock. .... *Printed for both distribution and sessional papers.*

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- 13.** Annual Report of the Department of the Interior, for the year 1898. Presented 15th May, 1899, by Hon. C. Sifton. .... *Printed for both distribution and sessional papers.*
- 13a.** Summary Report of the Geological Survey Department, for the year 1898. Presented 24th April, 1899, by Hon. C. Sifton. .... *Printed for both distribution and sessional papers.*

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- 14.** Annual Report of the Department of Indian Affairs, for the year ended 30th June, 1898. Presented 21st March, 1899, by Hon. C. Sifton. .... *Printed for both distribution and sessional papers.*
- 15.** Report of the Commissioner of the North-West Mounted Police Force, 1898. Presented 14th June, 1899, by Sir Wilfrid Laurier. .... *Printed for both distribution and sessional papers.*

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- 16.** Report of the Secretary of State of Canada, for the year ended 31st December, 1898. Presented 27th March, 1899, by Sir Wilfrid Laurier. .... *Printed for both distribution and sessional papers.*
- 16a.** Civil Service List of Canada, 1898. Presented 27th March, 1899, by Sir Wilfrid Laurier.  
*Printed for both distribution and sessional papers.*
- 16b.** Annual Report of the Department of Public Printing and Stationery, for the year ended 30th June, 1898. Presented 10th April, 1899, by Hon. Sir Wilfrid Laurier.  
*Printed for both distribution and sessional papers.*
- 16c.** Report of the Board of Civil Service Examiners, for the year ended 31st December, 1898. Presented 2nd May, 1899, by Sir Wilfrid Laurier. .... *Printed for both distribution and sessional papers.*
- 17.** Report of the Joint Librarians of Parliament, for the year 1898. Presented 16th March, 1899, by the Hon. The Speaker. .... *Printed for both distribution and sessional papers.*
- 18.** Report of the Minister of Justice as to Penitentiaries of Canada, for the year ended 30th June, 1898. Presented 21st June, 1899, by Hon. C. Fitzpatrick.  
*Printed for both distribution and sessional papers.*
- 19.** Report of the Department of Militia and Defence of Canada, for the year ended 31st December, 1898. Presented 27th March, 1899, by Hon. F. W. Borden.  
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- 20.** Report on the Prohibition Plebiscite held on the 29th day of September, 1898, in Canada. Presented 24th April, 1899, by Sir Wilfrid Laurier. .... *Printed for both distribution and sessional papers.*
- 21.** Return to an order of the House of Commons, dated 21st April, 1897, for copies of all letters, correspondence, petitions, etc., relating to the dismissal of David Ross as postmaster at Kinross, in the province of Prince Edward Island. Presented 21st March, 1899.—*Mr. Martin. . . Not printed.*
- 21a.** Return to an order of the House of Commons, dated 21st April, 1897, for copies of all correspondence, papers, petitions, etc., in connection with the dismissal of the late postmaster at Little Sands, province of Prince Edward Island. Presented 21st March, 1899.—*Mr. Martin.*

*Not printed.*



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CONTENTS OF VOLUME 14—*Continued.*

- 21b. Return to an order of the House of Commons, dated 21st April, 1897, for copies of all papers, correspondence, petitions, evidence, reports and documents of every nature connected with the dismissal of J. H. Crépeau as postmaster at St. Camille, county of Wolfe, province of Quebec. Presented 21st March, 1899.—*Mr. Ives*.....*Not printed.*
- 21c. Return to an address of the House of Commons, dated 18th April, 1898, for a return giving : (a) The names of employees relieved from duty by the government by dismissal or otherwise in the Montreal custom-house from 13th July, 1896, to 1st March, 1898. (b) The years of service of each employee so relieved of duty. (c) The amount of retiring allowance, if any. (d) The cause of dismissal in each case. (e) The amount of pay per annum of such employee at date of dismissal. (f) The names of new employees appointed, whether permanently or temporarily, from 13th July, 1896, to 1st March, 1898. (g) The amount to be paid to each such new temporary or permanent employee per month. Presented 2nd May, 1899.—*Mr. Quinn*....*Not printed.*
- 21d. Return to an order of the House of Commons, dated 2nd May, 1898, for a return showing the names of all employees on the Lachine canal and St. Ann lock dismissed from the public service since the 23rd day of June, 1896, the cause of dismissal, the name of complainant in each case, the amount of salary paid to the dismissed official, the name and salary paid to his successor in office. Presented 17th May, 1899.—*Mr. Monk*.....*Not printed.*
- 21e. Return to an address of the House of Commons, dated 14th March, 1898, for copies of all orders in council, papers, depositions, reports, evidence, correspondence and documents in relation or reference to any charges made against Peter S. Archibald, lately chief engineer of the Intercolonial Railway, or to the dismissal of the said Peter S. Archibald from his position or office as such chief engineer, or the grounds or reasons for such dismissal, or in relation or reference to any claim of the said Peter S. Archibald for superannuation allowance or otherwise in relation or reference to the retirement or dismissal of the said Peter S. Archibald from the service of the Intercolonial Railway. Presented 25th May, 1899.—*Mr. Borden (Halifax)*.....*Not printed.*
- 21f. Return to an order of the House of Commons, dated 7th June, 1897, for a return of all correspondence, reports and papers in connection with the dismissal of Mr. Wm. Bateman of Port Perry from, and the appointment of Mr. Williams to, the position of agent to the Scugog Island Indians. Presented 29th May, 1899.—*Mr. Hughes*.....*Not printed.*
- 21g. Return to an order of the House of Commons, dated 26th April, 1899, for a statement of all persons or commissions of inquiry appointed to inquire into the conduct of employees of the government since August 1st, 1896, giving the names of commissioners, their rate of pay and allowances, the aggregate total amount paid to each as pay and allowance, and the total expenses of each commission outside of pay and allowance ; also the names and post office addresses of all persons dismissed on the reports of the commissioners (Inland Revenue). Presented 31st May, 1899.—*Mr. Foster*.  
*Not printed.*
- 21h. Return to an order of the House of Commons, dated 1st May, 1899, for copies of all papers, documents and correspondence in connection with the dismissal of D. W. Ball from being postmaster at the village of Bath, Ontario. Presented 2nd June, 1899.—*Mr. Wilson*.....*Not printed.*
- 21i. Return to an order of the House of Commons, dated 10th May, 1899, for copies of the report of Mr. Hawkins, post office inspector, in reference to the inquiry or investigation held on the conduct of J. R. Leake, postmaster of Morton, in the county of Leeds, together with copies of all correspondence, complaints, affidavits or declarations and evidence taken at the investigation relating to said postmaster ; together with a copy of the notice of his dismissal. Presented 2nd June, 1899.—*Mr. Taylor*.....*Not printed.*
- 21j. Return to an order of the House of Commons, dated 5th June, 1899, for copy of correspondence, etc., relating to the dismissal of Mr. Alfred Lenoir, as fishery overseer at Isle Madame, in the county of Richmond, Nova Scotia. Presented 5th June, 1899.—*Sir Louis Davies*...*Not printed.*
- 21k. Return to an address of the House of Commons, dated 17th May, 1899, for copies of all orders in council respecting the appointment and dismissal of Mr. Russell, inspector of steamboats ; copies of all reports and evidence touching an inquiry into his conduct ; also of all reports, papers and correspondence respecting his last appointment or reinstatement to the public service ; also all communications from, to or concerning this officer since he has been discharging duties in the Yukon district. Presented 6th June, 1899.—*Sir C. Hibbert Tupper*.....*Not printed.*

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CONTENTS OF VOLUME 14—*Continued.*

- 21l.** Return to an order of the House of Commons, dated 1st May, 1899, for copies of all petitions, correspondence, letters or documents in relation to the following dismissals: Job Bilodeau, postmaster of Chambord; Louis Desbiens, postmaster of St. Jérôme; William Larouche, postmaster of Lake Bouchette; Ferdinand Larouche, postmaster of Delisle; F. X. Letourneau, postmaster of St. Bruno, all in the county of Chicoutimi; together with all petitions, correspondence, letters or documents in relation to the appointment of their successors. Presented 13th June, 1899.—*Mr. Casgrain.*  
*Not printed.*
- 21m.** Return to an order of the House of Commons, dated 29th May, 1899, for copies of all papers and correspondence in reference to the dismissal of Christopher Walker, postmaster of Ailsa Craig, Ontario, with copies of charges, if any, made against such officer and report of any investigation held. Presented 13th June, 1899.—*Mr. Haggart.*.....*Not printed.*
- 21n.** Return to an order of the House of Commons, dated 14th March, 1898, for copies of all correspondence, inspector's reports, and all documents respecting the dismissal of the postmaster at Agnes and the removal of the office. Presented 13th June, 1899.—*Mr. Pope.*.....*Not printed.*
- 21o.** Return to an order of the House of Commons, dated 14th June, 1899, for copies of correspondence and other papers in regard to the dismissal of Mr. Joseph McNeil, light-keeper, Jerome Point, St. Peter's, Cape Breton. Presented 14th June, 1899.—*Sir Louis Davies.*.....*Not printed.*
- 21p.** Return to an address of the Senate, dated 12th April, 1899, for copies of the complaints and all correspondence relating thereto, which led to the dismissal of Mr. Freeman Ketcheson from the position of post office mail clerk, including the statement or statements of the said Freeman Ketcheson in reply to said complaints. Presented 15th June, 1899.—*Hon. Sir Mackenzie Bowell.*  
*Not printed.*
- 21q.** Return to an address of the House of Commons, dated 30th March, 1898, for copies of all orders in council, papers, depositions, reports, documents, etc., in relation to the dismissal of Napoléon Alain as postmaster of L'Ancienne Lorette, and also copies of all instructions given by the department of the postmaster general or any officers thereof, to the post office inspector in Quebec, or to any other officer thereof in relation to the giving of evidence in an action by the said Napoléon Alain *versus* one Frederic Belleau for damages. Presented 19th June, 1899.—*Mr. Casgrain.*  
*Not printed.*
- 21r.** Return to an order of the House of Commons, dated 24th April, 1899, for copies of all papers connected with the dismissal of Boaz Gross, late harbour master of Hillsboro', N.B., and with the appointment of his successor, including copies of all charges and complaints, the evidence taken by Commissioner McAlpine, the commissioner's report, and all correspondence, recommendations and other papers in any way relating to the said dismissal and the subsequent appointment. Presented 26th June, 1899.—*Mr. McInerney.*.....*Not printed.*
- 21s.** Return to an order of the House of Commons, dated 8th May, 1899, for copies of all reports, correspondence and other papers connected with the dismissal of Mr. Fairlie, principal of the Rupert's Land industrial school, in the province of Manitoba. Presented 28th June, 1899.—*Mr. Bourassa.*  
*Not printed.*
- 21t.** Return to an order of the House of Commons, dated 19th June, 1899, for copies of all papers, documents and correspondence in connection with the dismissal of John Hens, caretaker of the public building in the town of Napanee. Presented 4th July, 1899.—*Mr. Wilson.*.....*Not printed.*
- 21u.** Return to an address of the House of Commons, dated 8th May, 1899, for a copy of the commission issued to investigate into the charges made against W. A. Hogg, landing-waiter at the port of Collingwood, the evidence taken by the said commission, the report made by the commission, the order in council made thereon, and all correspondence and papers in connection therewith. Presented 25th July, 1899.—*Mr. McCarthy.*.....*Not printed.*
- 21v.** Return to an order of the House of Commons, dated 26th July, 1899, for copy of the report of Thomas Woodyatt, commissioner, relative to certain charges made against John Galna, of Her Majesty's customs at Parry Sound, Ontario. Presented 26th July, 1899.—*Mr. Paterson.*  
*Not printed.*
- 21w.** Return to an order of the House of Commons, dated 26th July, 1899, for copy of report, etc., in connection with the suspension of Wm. Caldwell, preventive officer of customs at Anderdon, Ontario. Presented 26th July, 1899.—*Mr. Paterson.*.....*Not printed.*
- 21x.** Return to an order of the House of Commons, dated 29th July, 1899, for copy of the report of M. B. Colcock, assistant inspector of ports, relative to the preventive station at Anderdon, and to William Caldwell, late preventive officer thereat. Presented 29th July, 1899.—*Hon. W. Paterson.*  
*Not printed.*



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- 21*y.* Return to an order of the House of Commons, dated 26th June, 1899, for copies of all correspondence had with the department of railways and canals, or with any member of the government, in connection with the cases of Pierre Michaud and Fred. Belanger, porter and track foreman, respectively, on the Intercolonial Railway at Trois Pistoles, and dismissed therefrom in 1898, and for all petitions and papers in regard thereto. Presented 8th August, 1899.—*Mr. Foster.*  
*Not printed.*
- 21*z.* Return to an order of the House of Commons, dated 12th June, 1899, for copies of all correspondence, telegrams, petitions, reports and all other papers in connection with the dismissal of Mr. William D. McMillan as light-keeper at Wood Islands, in the province of Prince Edward Island, and the appointment of his successor. Presented 10th August, 1899.—*Mr. Martin*  
*Not printed.*
22. Return to an order of the House of Commons, dated 10th May, 1897, for copies of all petitions, letters, notices, correspondence, bonds and papers in relation to the establishment of a post office in the county of Annapolis called "Virginia," and the appointment of Mr. Ezekiel Banks as postmaster for such office. Presented 21st March, 1899.—*Mr. Mills* . . . . . *Not printed.*
- 22*a.* Return to an order of the House of Commons, dated 10th May, 1897, for copies of all petitions, letters, notices, bonds, papers and documents in relation to the establishment of a post office in the county of Annapolis called "North Perott," and the appointment of Mr. Alfred Spurr to the postmastership of said office. Presented 21st March, 1899.—*Mr. Mills* . . . . . *Not printed.*
- 22*b.* Return to an order of the House of Commons, dated 3rd May, 1897, for copies of all correspondence in connection with the appointment and installation of George G. King to the postmastership of Marsh Hill, Ontario, had with any member of the government, or any officer of the post office department. Presented 21st March, 1899.—*Mr. Foster* . . . . . *Not printed.*
23. Return of Treasury Board Over-Rulings of Auditor General's decisions between the beginning of the session of 1898 and the session of 1899. Presented 21st March, 1899, by Hon. W. S. Fielding.  
*Not printed.*
24. Statement of Governor General's Warrants issued since last session of parliament, on account of the fiscal year 1898-99. Presented 21st March, 1899, by Hon. W. S. Fielding . . . . . *Not printed.*
25. Statement of expenditure on account of miscellaneous unforeseen expenses from 1st July, 1898, to 16th March, 1899. Presented 23rd March, 1899, by Hon. W. S. Fielding . . . . . *Not printed.*
26. Report of the Commissioner, Dominion Police Force, for the year 1898. Presented 27th March, 1899, by Sir Wilfrid Laurier . . . . . *Not printed.*
27. Copy of an order in council relative to the issue of licenses to United States fishing vessels. Presented 30th March, 1899, by Sir Louis Davies . . . . . *Not printed.*
28. Return showing reductions and remissions made under section 141 as added to the Indian Act by section 8, chapter 35, 58-59 Victoria. Presented 30th March, 1899, by Hon. C. Sifton.  
*Not printed.*
29. Statement in pursuance of section 17 of the Civil Service Insurance Act, for the year ending 30th June, 1898. Presented 30th March, 1899, by Hon. W. S. Fielding . . . *Printed for sessional papers.*
30. Statement of all superannuation and retiring allowances in the civil service during year ended 31st December, 1898, showing name, rank, salary, service and cause of retirement of each person superannuated or retired, also whether vacancy filled by promotion or new appointment, and salary of any new appointee. Presented 30th March, 1899, by Hon. W. S. Fielding.  
*Printed for sessional papers.*
- 30*a.* Return to an address of the House of Commons, dated 14th February, 1898, for a return giving: (a) The names of all civil servants who have been superannuated between the 13th of July, 1896, and the 1st of February, 1898. (b) The age of each servant so superannuated. (c) The years of service of each person so superannuated. (d) The amount per annum each person had been in receipt of. (e) The amount of superannuation each person is to receive per annum. (f) The name of the new appointees in the civil service since said 13th of July. (g) The age of each such new appointee. (h) The amount to be paid to each such new appointee. Presented 14th June, 1899.—*Mr. Taylor* . . . . . *Not printed.*
- 30*b.* Return to an order of the House of Commons, dated 29th May, 1899, showing: (a) The superannuations made in the department of agriculture from 30th June, 1896, to 30th April, 1899, in both the inside and outside services. (b) The retiring allowances in each case. (c) The manner in which the vacancies thus created have been filled, with names of persons appointed to such vacancies and amounts of salary in each case. Presented 30th June, 1899.—*Mr. Montague.*  
*Not printed.*

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31. Detailed statement of all bonds and securities registered in the department of the secretary of state of Canada, since the last return, 16th February, 1898, submitted to parliament in accordance with section 23 of chapter 19 of the Revised Statutes of Canada. Presented 30th March, 1899, by Sir Wilfrid Laurier..... *Not printed.*
32. Statement in reference to fishing bounty expenditure for 1897-98. Presented 4th April, 1899, by Sir Louis Davies. .... *Not printed.*
33. Return to an order of the House of Commons, dated 5th April, 1899, for copies of papers in connection with the case of Nelson *vs.* Donnelly, being an appeal from the decision of the gold commissioner at Dawson city. Presented 5th April, 1899.—*Hon. C. Sifton*..... *Not printed.*
34. Return to an order of the House of Commons, dated 18th April, 1898, for copies of all reports and recommendations from the inspectors of cavalry, artillery and infantry on their inspections up to April 18th, for the financial year 1897-98. Presented 10th April, 1899.—*Mr. Hughes*. *Not printed.*
35. Statement of the affairs of the British Canadian Loan and Investment Company, as on the 31st December, 1898. Presented (Senate) 21st March, 1899, by the Hon. The Speaker.... *Not printed.*
36. Return of orders in council relating to Dominion lands in the provinces of Manitoba and British Columbia, and in the North-west Territories. Presented (Senate) 11th April, 1899, by Hon. R. W. Scott..... *Not printed.*
37. Commission appointing William Ogilvie, Esq., a commissioner under chapter 114, Revised Statutes of Canada, to inquire into and report upon charges preferred against many government officials in the Yukon territory. Presented 17th April, 1899, by Hon. C. Sifton..... *Not printed.*
38. Return prepared by the clerk of the crown in chancery in obedience to an order of the House of Commons, dated 10th May, 1899, for copies of the poll-books and voters' lists for the counties of Beauce, Lévis, Montmagny and Kamouraska, used at the plebiscite vote. Presented 13th July, 1899, by The Deputy Speaker..... *Not printed.*
39. Return to an address of the House of Commons, dated 14th March, 1898, for a return showing in detail the extent of all gold dredging leases applied for and granted in the North-west Territories and the Yukon, where situated, the names and post office addresses of the applicants, and amount paid therefor; also all correspondence and orders in council in connection therewith. Presented 19th April, 1899.—*Mr. Foster*..... *Not printed.*
40. Supplementary return to an address of the House of Commons, dated 14th February, 1898, for copies of all correspondence, advertisements for tenders and answers thereto, reports and orders in council, and a list of all permits, licenses or leases granted, containing names of the grantees and extent of territory given and conditions attached to each, the amount paid and to be paid therefor in respect of gold placer mining or gold dredging areas in the North-west Territories and the Yukon district. Presented 19th April, 1899.—*Mr. Foster*..... *Not printed.*
41. Return of all lands sold by the Canadian Pacific Railway Company, from the 1st October, 1897, to the 1st October, 1898. Presented 19th April, 1899, by Hon. C. Sifton..... *Not printed.*
42. Return of correspondence, etc., respecting the affairs of the Canadian Pacific Railway Company, which the department of the interior has had since the previous return was presented to parliament under the resolution of the 20th February, 1882. Presented 19th April, 1899, by Hon. C. Sifton..... *Not printed.*
43. Return of orders in council which have been published in the *Canada Gazette* and in the *British Columbia Gazette*, in accordance with the provisions of sub section (*d*) of section 38 of the regulations for the survey, administration, disposal and management of Dominion lands within the 40-mile railway belt in the province of British Columbia. Presented 19th April, 1899, by Hon. C. Sifton..... *Not printed.*
44. Return of orders in council which have been published in the *Canada Gazette*, in accordance with the provisions of section 46, the North-west Irrigation Act, being 57-58 Victoria, chapter 30, etc. Presented 19th April, 1899, by Hon. C. Sifton..... *Not printed.*
45. Return of orders in council which have been published in the *Canada Gazette*, in accordance with the provisions of clause 91 of the Dominion Lands Act, chapter 54 of the Revised Statutes of Canada, and its amendments. Presented 19th April, 1899, by Hon. C. Sifton..... *Not printed.*
46. Return to an order of the House of Commons, dated 21st April, 1899, for a copy of representations of the high commissioner for Canada and the agents general of the British colonies, respecting the application of estate duty to personal property situate in the colonies in 1894. Presented 21st April, 1899.—*Sir Wilfrid Laurier*..... *Printed for sessional papers.*



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CONTENTS OF VOLUME 14--*Continued.*

47. Return to an order of the House of Commons, dated 21st April, 1899, for a copy of the correspondence between the colonial office and the government of Canada on the subject of the island of Anticosti. Presented 21st April, 1899.—*Sir Wilfrid Laurier*. . . . .*Printed for sessional papers.*
48. Return to an address of the House of Commons, dated 18th April, 1898, for copies of all orders in council, memorials, correspondence and every other document in connection with the granting 150,000 acres of public lands in favour of the university of Manitoba, and the transfer and patenting of the same to the university. Presented 24th April, 1899.—*Mr. LaRivière*.  
*Printed (in part) for distribution and sessional papers.*
- 48a. Supplementary return to an address of the Senate, dated 31st March, 1898, for a statement of the quantity of lands allotted for school purposes in Manitoba; the quantity of said lands sold, and the prices at which they have been sold; the amount received on that account; the amounts still due to the government; the manner in which this fund is invested and administered; the amount already paid to the province of Manitoba, how much on the capital, if any, and how much on the interest; the amount still at the credit of the province, whether on the capital or on the interest; the dates of payment in each case and the amount of each payment; and also all the correspondence, papers, memoranda and orders in council relating thereto, up to date. Presented 25th April, 1899.—*Hon. Mr. Bernier*. . . . .*Not printed.*
49. Return to an order of the House of Commons, dated 19th April, 1899, for a copy of the report of the commissioners appointed in 1897 to inquire into the state of the public records and of the public buildings. Presented 1st May, 1899.—*Mr. Belcourt*. . . . .*Not printed.*
50. Order of the House of Commons, dated 19th April, 1899, for a statement of the number of sheets of notes of \$1 and \$2 delivered to the government from the 1st of August, 1897, by the new contractors, together with the number of back, tint and face plates of the above denominations, delivered to the government to date, as per the contract. Presented 1st May, 1899.—*Mr. Foster*.  
*Not printed.*
51. Return to an address of the House of Commons, dated 19th April, 1899, for copies of all correspondence with the imperial and colonial governments, and other parties, relative to the proposed Pacific cable, since the return brought down last session; also of the report of the imperial commission on this subject, if leave has been obtained to publish it. Presented 8th May, 1899.—*Mr. Casey*.  
*Printed for both distribution and sessional papers.*
- 51a. Supplementary return to No. 51. Presented 12th May, 1899.  
*Printed for both distribution and sessional papers.*
- 51b. Return to an address of the House of Commons, dated 29th May, 1899, for copies of all orders in council and correspondence connected with and relating to the offer of the government of British Columbia, made in 1899, respecting the Pacific cable. Presented 12th June, 1899.—*Sir C. Hibbert Tupper*. . . . .*Printed for both distribution and sessional papers.*
52. Return to an address of the House of Commons, dated 30th March, 1898, for copies of all papers and correspondence respecting the enforcement of coasting laws of Canada on the Pacific or Atlantic coasts, in so far as it relates to the department of customs. Presented 8th May, 1899.—*Sir C. Hibbert Tupper*. . . . .*Printed for sessional papers.*
- 52a. Supplementary return to No. 52 (Department of the Interior). Presented 5th June, 1899.  
*Not printed.*
53. Return to an address of the House of Commons, dated 24th April, 1899, for a copy of lease of the property in Quebec known as the "Plains of Abraham," or of any other title under which the government of Canada holds said property; also of all memorials, correspondence, etc., addressed to the government on the subject of renewing said lease or otherwise acquiring the same. Presented 8th May, 1899.—*Mr. Casgrain*. . . . .*Not printed.*
54. Return to an order of the House of Commons, dated 24th April, 1899, for a return showing the expenditure for each year from 1867 to 1889, inclusive, of the militia department; also the amount in each of the above years expended for the staff of the militia; also the amount in each of the above years expended for the royal military college, Kingston. Presented 8th May, 1899.—*Mr. Domville*. . . . .*Not printed.*
55. Return to an address of the House of Commons, dated 19th April, 1899, for copies of all correspondence, minutes of council, commission of appointment relating to the appointment of the hon. the chief justice of the province of British Columbia from the date of the decease of the Hon. Chief Justice Davie to the appointment of the present incumbent; also relating to the appointment of the Hon. Mr. Justice Irving and the Hon. Mr. Justice Martin of the supreme court of British Columbia. Presented 15th May, 1899.—*Sir Charles Tupper*. . . . .*Not printed.*

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56. Return to an address of the House of Commons, dated 26th April, 1899, for copy of lease or agreement and of all correspondence relating to the occupation of the Champ de Mars in the city of Montreal by the Montreal authorities and the condition of said occupation. Presented 9th May, 1899.—*Mr. Monk*. . . . . *Not printed.*
57. Return to an order of the House of Commons, dated 24th April, 1899, for a return showing the gross working expenses and earnings, respectively, of the Intercolonial Railway for each month from 1st July, 1898, to date. Also the gross working expenses and earnings, respectively, of the same road for the similar months of the preceding year. Presented 9th May, 1899.—*Mr. Foster*.  
*Printed for sessional papers.*
- 57a. Return to an order of the House of Commons, dated 24th April, 1899, for a return showing the total amount of revenue collected by the government (a) from passenger traffic; (b) from freight traffic at the stations, freight agencies and passenger agencies along the extension of the Intercolonial Railway from Chaudière to Montreal, both included, (1) from the 30th day of June, 1898, exclusive, to the 1st day of March, 1899, exclusive; (2) from the 1st day of March, 1899, inclusive, to the 1st day of April, 1899, exclusive. Presented 16th May, 1899.—*Mr. Powell*.  
*Printed for sessional papers.*
- 57b. Return to an order of the House of Commons, dated 18th April, 1898, for a return containing a statement of expenditure out of income made for permanent improvements, extensions, additions and betterments, exclusive of works for ordinary maintenance and renewals, on account of the Intercolonial Railway from 30th June, 1891, to 1st July, 1897. Presented 17th May, 1899.—*Mr. Powell*. . . . . *Printed for sessional papers.*
- 57c. Return to an order of the House of Commons, dated 18th April, 1898, for copies of all tenders for ties for the use of the Intercolonial Railway from 1st January, 1896, to date, giving names, quantities, prices, and which tenders were accepted. Presented 17th May, 1899.—*Mr. Foster*.  
*Not printed.*
- 57d. Return to an order of the House of Commons, dated 30th March, 1898, for copies of all tenders received by the government, or by the department of railways and canals, or by any officials thereof, for railway ties and lumber of all kinds supplied to the Intercolonial Railway between July, 1896, and January, 1898, on the division of the railway in the province of Quebec. Presented 17th May, 1899.—*Mr. Casgrain*. . . . . *Not printed.*
- 57e. Return to an address of the Senate, dated 24th March, 1899, for a statement showing the quantity of rolling stock purchased in connection with the extension of the Intercolonial Railway from Lévis to Montreal, from whom purchased, and the price paid therefor. Presented 19th May, 1899.—*Hon. Sir Mackenzie Bowell*. . . . . *Not printed.*
- 57f. Return to an address of the Senate, dated 25th April, 1899, for a return showing quantity of freight carried over the Intercolonial Railway from Montreal to Halifax for shipment to Europe, during the winter 1898 and 1899. Presented 29th May, 1899.—*Hon. Mr. Perley*.  
*Printed for sessional papers.*
- 57g. Return to an order of the House of Commons, dated 8th May, 1899, for a return showing: 1. The total amount of expenditure on capital account in connection with the Intercolonial Railway and the extension thereof to Montreal from 30th June, 1898, exclusive, to the 1st day of May, 1899, exclusive. 2. The total revenue of the Intercolonial Railway and the Montreal extension thereof from 30th June, 1898, exclusive, to the 1st day of May, 1899, exclusive. 3. The total expenditure charged to revenue account in connection with the Intercolonial Railway and the Montreal extension thereof from 30th June, 1898, exclusive, to the 1st day of May, 1899, exclusive. Presented 13th June, 1899.—*Mr. Powell*. . . . . *Not printed.*
- 57h. Return to an order of the House of Commons, dated 15th May, 1899, for a return showing the names of persons to whom payments were made of allowance or drawback on freight charges on the New Brunswick portion of the Intercolonial Railway during the months of January and February, 1899, the amount and date of payment in each case, and the date at which the overcharge was made. Presented 13th June, 1899.—*Mr. Foster*. . . . . *Not printed.*
- 57i. Return to an order of the House of Commons, dated 15th May, 1899, for a copy of lease or contract under which the Intercolonial Railway management permitted or authorized the building of a restaurant on the railway right of way at Grand Narrows. Also copies of all correspondence in reference to the granting of the privilege of erecting such building on the railway property, and also in reference to running the same. Presented 23rd June, 1899.—*Mr. McDougall*. *Not printed.*



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- 57j. Return to an order of the House of Commons, dated 19th April, 1899, for copies of advertisements issued during 1898, inviting tenders for steel rails and fastenings for the Intercolonial and Prince Edward Island Railways, copies of tenders received therefor, of all correspondence in connection therewith, and of any contract or contracts entered into. Presented 27th June, 1899.—*Sir Charles Tupper*..... *Not printed.*
- 57k. Supplementary return to 57e. Presented 28th June, 1899 . . . . . *Not printed.*
- 57l. Return to an order of the House of Commons, dated 26th June, 1899, showing the names of persons to whom payments were made of allowances or drawbacks on freight charges on the Nova Scotia portion of the Intercolonial Railway from 1st July, 1898, to 31st March, 1899, giving amount and date of payment and date at which overcharge was made. Presented 13th July, 1899.—*Mr. Bell (Pictou)* . . . . . *Not printed.*
- 57m. Return to an order of the House of Commons, dated 19th June, 1899, showing: 1. The combined engine and car mileage—total, and that of the Intercolonial Railway—for each month from March 1, 1898, for the terminals, bridge, and the other leased portions of the Grand Trunk Railway, as contemplated in the third and thirty-third sections of the schedule to Bill No. 138. 2. The amounts for (a) maintenance and repairs, and (b) for all other operating expenses separately, incurred by the Grand Trunk Railway Company and the Intercolonial Railway each month since March 1, 1898. 3. Copy of returns and information made under section 33 of said schedule for each month from March 1, 1898. Presented 18th July, 1899.—*Mr. Foster* . . . . . *Not printed.*
- 57n. Return to an address of the House of Commons, dated 19th April, 1899, for copies of all petitions, memorials, letters and correspondence addressed to the government, or to any of the members thereof, since the last session, by the board of trade of the city of Quebec, the council thereof, the city council of the city of Quebec, or any other public bodies or citizens of the said city, in relation to a better service between the Intercolonial Railway and the city of Quebec. Presented 29th July, 1899.—*Mr. Casgrain* . . . . . *Not printed.*
58. Return to an address of the House of Commons, dated 1st May, 1899, for copies of all orders in council and all reports and correspondence made by or had between W. J. Christie, late of the inland revenue department, Winnipeg, and other officers of department in Manitoba, and the department at Ottawa or the minister of inland revenue relating to the removal, the suspension and final dismissal of W. J. Christie, lately one of the chief officers in department at Winnipeg. Presented 15th May, 1899.—*Mr. Roche* . . . . . *Not printed.*
- 58a. Supplementary return to No. 58. Presented 30th May, 1899 . . . . . *Not printed.*
59. Return to an order of the House of Commons, dated 24th April, 1899, for copy of all reports to the minister of the interior, or to the department of the interior, or to any officer of that department from William Ogilvie, or from the council of the Yukon district, or from any member of such council relating to the administration of the said Yukon district or relating to any matter connected with the administration of the said district. Presented 15th May, 1899.—*Mr. Borden (Halifax)* . . . . . *Not printed.*
60. Return to an order of the House of Commons, dated 19th April, 1899, for copies of all correspondence connected with the department of the interior at Ottawa authorizing the agent at Yorkton, Northwest-Territories, to grant entry for the S. E.  $\frac{1}{4}$  of section 14, township 24, range 3 west of the 2nd meridian, to Mr. W. C. Middleton. Presented 15th May, 1899.—*Mr. Davin* . . . . . *Not printed.*
61. Return to an address of the House of Commons, dated 1st May, 1899, for copies of all letters and telegrams that have passed between the government and the Ashcroft Water and Electric Company, or Mr. Peter Ryan, or Mr. John Shields, or any other person on their behalf in regard to the purchase of some 4,000 acres of land near Ashcroft, B.C., within the railway belt. Presented 15th May, 1899.—*Mr. Prior* . . . . . *Not printed.*
62. Return to an address of the House of Commons, dated 19th April, 1899, for copies of any orders in council passed up to date respecting any officers of the department of the interior taking up mining claims; respecting any government officers taking up mining claims; respecting officers of the department of the interior making homestead entries or buying lands. Presented 15th May, 1899.—*Mr. Davin* . . . . . *Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

- 63.** Return to an order of the House of Commons, dated 24th April, 1899, for copies of all letters, telegrams and communications from Archer Martin, of Victoria, B.C., barrister-at-law, to the minister of interior or to the deputy minister, or to any officers of the department of the interior, relating to the granting or recognition of any permit or authority to take or import liquor into the Yukon district or relating to the importation of liquor into the Yukon district, and all replies to such letters, telegrams and communications. Presented 15th May, 1899.—*Mr. Borden (Halifax).*  
*Printed for sessional papers.*
- 63a.** Return to an order of the House of Commons, dated 24th April, 1899, for copies of all letters, telegrams and communications from Frederick Peters, Q.C., of Victoria, B.C., to the minister of the interior, or to any minister of the crown, or to any deputy minister, applying for or relating to the granting of any permit to take or import liquor into the Yukon district, and all replies to such letters, telegrams and communications. Presented 15th May, 1899.—*Mr. Borden (Halifax).*  
*Printed for sessional papers.*
- 63b.** Correspondence relating to the importation of liquor into the Yukon territory. Presented 16th May, 1899, by Hon. C. Sifton.....*Printed for sessional papers.*
- 63c.** Return to an order of the House of Commons, dated 8th May, 1899, for copies of all liquor permits issued by Major Walsh, and all reports and correspondence respecting his action in this respect. Presented 18th May, 1899.—*Sir C. Hibbert Tupper*.....*Printed for sessional papers.*
- 63d.** Return to an order of the House of Commons, dated 15th May, 1899, for copies of correspondence, telegrams, etc., in connection with the management of the Yukon territory, alluded to in the speech of the honourable the minister of the interior, during the debate on the address in answer to His Excellency's speech at the opening of the session. Presented 25th May, 1899.—*Sir C. Hibbert Tupper*. ....*Not printed.*
- 63e.** Return to an address of the House of Commons, dated 19th April, 1899, for copies of all correspondence which has taken place between the hon. the minister of the interior, or any officer of his department, and the government of the North-west Territories respecting the issue, granting or withholding of permits for the conveyance of liquor into the Yukon territory. Presented 30th May, 1899.—*Mr. Clarke* .....*Not printed.*
- 63f.** Return to an order of the House of Commons, dated 19th April, 1899, for a return of all liquors taken into the Yukon since July 1, 1896, giving the names of the persons or companies taking them in, the quantity in each case, the date of issue of permit and the authority granting the permit; also all correspondence had with any parties in connection with the demand for, or granting of, permits for taking liquors into the Yukon. Presented 6th June, 1899.—*Mr. Foster.*  
*Not printed.*
- 63g.** Return to an order of the House of Commons, dated 19th April, 1899, for an itemized statement of the number of gallons of intoxicating liquors taken into the Klondike district since July, 1896, the number of permits granted therefor, with the names and post office addresses of those to whom said permits were granted and the amount paid therefor. Presented 6th June 1899.—*Mr. Foster.*  
*Not printed.*
- 63g\*.** Supplementary return to No. 63f. Presented 13th July, 1899.....*Not printed.*
- 64.** Copy of agreement dated 1st July, 1890, between the Department of Railways and Canals and the Canadian Pacific Railway Company. Presented 16th May, 1899, by Hon. A. G. Blair.  
*Not printed.*
- 65.** Return to an order of the House of Commons, dated 8th May, 1899, for copies of all letters, documents, memoranda, agreements and correspondence containing, embodying, relating to or referring to the terms and conditions upon which tenders were asked for the Magdalen Island mail contract, and upon which the contract was subsequently let to R. J. Leslie, of Leslie, Hart & Co., Halifax, N.S. Presented 17th May, 1899.—*Mr. Pope*.....*Not printed.*
- 66.** Return to an address of the Senate, dated 24th March, 1899, for copies of all correspondence with and instructions given to Louis Coste, late engineer in the public works department, with reference to the Yukon-Teslin route, and the navigation of the rivers and lakes connected therewith, and all reports thereon, made by the said Louis Coste. Presented 17th May, 1899.—*Hon. Sir Mackenzie Bowell*.....*Not printed.*
- 66a.** Return to an order of the House of Commons, dated 24th April, 1899, for a copy of the report or reports of Mr. Coste, late engineer of the public works department, on the Yukon, more especially on the Teslin Lake route for a railway into the Yukon; also a copy of the report of Mr. Lafontaine, or a copy of their joint report, if they made such a report. Presented 18th May, 1899.—*Mr. Davin* .....*Printed for sessional papers.*



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66. (1898.) Report of commissioners appointed to investigate, inquire into and report upon the state and management of the business of the St. Vincent de Paul penitentiary. Presented 26th April, 1898.—*Printed for distribution and sessional papers this year (1899). See Sessional Paper No. 18, page 221.*
67. Return to an address of the Senate, dated 11th April, 1899, for: 1. Copy of the last government's return made by La Banque du Peuple before that bank suspended payment, as well as the name of the bank official and a copy of the declaration made by him. 2. Copy of the different statements of the affairs of said bank submitted by the directors at each of the public meetings of the stockholders and depositors which were held since the date of suspension. 3. List of the names of the directors of the bank at the date of its suspension, and the number of shares held by each of such directors on that date. 4. List of sales or transfers, if any, that may have been made of the stock of any one or more of the directors since the date of the suspension, and to whom made. 5. List of any vacancy or vacancies that may have occurred since the said date and the cause or causes thereof, as well as the names of those who have been appointed to fill any such vacancy. 6. The price as near as can be ascertained from the quotations of the stock of any sales or transfers that were made within the last month immediately before such suspension, and the prices paid for any such transfer of stock that may have been made since the date of suspension up to 1st April, 1899. 7. List of the names of the stockholders of the bank on the 1st day of April, 1899, and the number of shares held by each on that date. 8. Statement in detail of the assets and liabilities of the bank, excepting therefrom the liabilities to the depositors and stockholders which may be given in the aggregate. Presented 17th May, 1899.—*Hon. Mr. McMillan.....Not printed.*
68. Return to an address of the House of Commons, dated 8th May, 1899, for copies of all correspondence between the government and B. Haigh & Son, of British Columbia, or any person or persons acting on their behalf in the year 1880, or thereabouts, in regard to an application for the use of Deadman's Island. Also between the Dominion government and the attorney general of the province of British Columbia or other member of the provincial government in regard to the said application, or to the subject thereof. Presented 18th May, 1899.—*Mr. Prior.....Not printed.*
- 68a. Return to an address of the House of Commons, dated 1st May, 1899, for copies of all orders in council respecting Stanley Park and Deadman's Island, Vancouver, B.C., and all correspondence between the different departments of the Canadian government and the imperial military and naval authorities respecting the park or island or both. Also for copies of all correspondence respecting the same with the government of British Columbia, the city of Vancouver and the park authorities. Also for all correspondence between the member for Burrard, the hon. minister of militia and defence and the department of militia, the hon. minister of the interior and other members of the government respecting the same. Also for all correspondence between Mr. Ludgate and his representative and any department of government respecting Deadman's Island. Also a copy of all applications and correspondence respecting a lease or grant of Deadman's Island. Also a copy of all departmental reports, memoranda or letters on file in the departments of justice, interior, militia and defence respecting the park, Deadman's Island, or the title and disposal of the same. Also a copy of all grants or leases of the park or Deadman's Island. Also all reports or information obtained by the different departments before any lease or grant of Deadman's Island was enacted. Also all memorials or correspondence respecting the granting of any lease of Deadman's Island. Presented 31st May, 1899.—*Mr. Prior.*  
*Printed for both distribution and sessional papers.*
69. Return to an order of the House of Commons, dated 19th April, 1899, for a return of all papers, documents and correspondence between the Winnipeg grain exchange and the department of public works in reference to keeping the harbour at Fort William free of ice to the latest possible date. Presented 18th May, 1899.—*Mr. Roche.....Not printed.*
70. Return to an address of the House of Commons, dated 19th April, 1899, for copies of letters, instructions, correspondence and report of the commissioner appointed to inquire into the grievances of the workmen on the Crow's Nest Pass Railway, and into the circumstances attending the death of two of said employees, named McDonald and Fraser, at or near Pincher Creek, with report of the commissioner in reinvestigation with respect to all the facts connected with the death of Charles P. McDonald and E. McC. Fraser, who were employed in connection with the construction of the Crow's Nest Pass Railway. Presented 18th May, 1899.—*Mr. Bell (Pictou).*  
*Summary Report printed for both distribution and sessional papers.*

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71. Return to an order of the House of Commons, dated 19th April, 1899, for copies of instructions given to Mr. F. C. Wade, whether before he left for Dawson to act in several official capacities or subsequently, more particularly a copy of the permission given him, if the permission was in writing, to stake claims in the Klondike. Presented 18th May, 1899.—*Mr. Davin...Not printed.*
72. Return to an address of the House of Commons, dated 1st May, 1899, for copies of all correspondence between the government of British Columbia and the government of Canada since July, 1898, to the present date respecting the supreme courts, county courts or any of the judges for the province aforesaid, the appointments of said judges or of any of them, or other matters relating to the administration of justice in the said province. Presented 25th May, 1899.—*Sir C. Hibbert Tupper.....Not printed.*
73. Return to an order of the House of Commons, dated 24th April, 1899, for copies of any correspondence in relation to the construction of sheds on the wharfs at St. Méthode and Mistassini, and to the awarding of the contract for the said buildings to L. P. Bilodeau, of Roberval. Presented 25th May, 1899.—*Mr. Casgrain.....Not printed.*
74. Return to an order of the House of Commons, dated 24th April, 1899, for copies of all papers, correspondence, etc., in connection with the award of the contract to Mr. Thomas Gauthier, of Montreal, by the department of public works for the dredging at Coteau Landing; the call for tenders, if any; the amount expended out of the \$21,000 voted, and to whom paid. Also correspondence between Mr. Gauthier and Mr. McDonald, who did the work; the amount of work done in cubic feet, and how paid. Presented 25th May, 1899.—*Mr. Bergeron.*  
*Printed for sessional papers.*
75. Return to an order of the House of Commons, dated 24th April, 1899, for copies of correspondence between the government, or the department of public works, and Mr. W. Donaghue, or any other person, in relation to the building of scows at Roberval to accompany the dredge at that place, and to the awarding of the contract for the building of the said dredges to the said W. Donaghue. Presented 25th May, 1899.—*Mr. Casgrain.....Not printed.*
76. Return to an order of the House of Commons, dated 10th May, 1899, for copies of all leases, papers and documents of and concerning the lease of certain property on Isle aux Noix, in the province of Quebec, held by the government and under the control of the department of militia and defence, showing the names of lessees since 1st January, 1895, to present time, and the amount of rental paid by such lessees. Presented 25th May, 1899.—*Mr. Quinn.....Not printed.*
77. Return to an order of the House of Commons, dated 19th April, 1899, for a return showing when and for what period the steamer "Alaska" was engaged on the survey of the channel in Lake St. Francis, and the service the steamer "Alert" was engaged on during the same period. Presented 25th May, 1899.—*Mr. Taylor.....Not printed.*
78. Return to an order of the House of Commons, dated 19th April, 1899, for a return showing the amounts paid to Tom S. Rubidge, superintending engineer of the Cornwall canal, for salary and expenses from 1st January, 1897, to 1st January, 1899. A detailed statement of the amount paid for cab or hack hire in the same period. A statement of the total expense incurred in connection with the steamer "Alert"; also a statement showing how many days the steamer "Alert" was engaged in actual survey work, from 1st January, 1897, to 1st January, 1899, and how many days in any other service and the nature of the same. Presented 25th May, 1899.—*Mr. Taylor.*  
*Not printed.*
79. Return to an address of the House of Commons, dated 30th March, 1898, for copies of all reports to his excellency the governor general, minutes of council, reports, papers and correspondence in any way relating to the navigation of the Yukon or Stikine rivers, or to customs regulations in connection therewith, including the transshipment of cargoes; also all reports to his excellency the governor general, minutes of council, correspondence and papers touching the customs regulations, and fees imposed in connection with Canadian goods passing through St. Michael's, Dyea, Skagway and Wrangel. Presented 25th May, 1899.—*Sir Charles Tupper.*  
*Printed for sessional papers.*
80. Return to an address of the House of Commons, dated 19th April, 1899, for copies of all correspondence and papers connected with the removal of Mr. Fawcett from the position of Yukon gold commissioner. Presented 25th May, 1899.—*Mr. Davin.....Not printed.*



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## CONTENTS OF VOLUME 14—*Continued.*

81. Return to an address of the House of Commons, dated 15th May, 1899, for copies of all orders in council, ordinances, commissions, appointments, bond certificates and oaths, relating to the appointment of the sheriff for Yukon territory; also copies of the same papers respecting the appointment of the clerk of the court for the Yukon territory. Presented 25th May, 1899.—*Sir C. Hibbert Tupper*.....*Not printed.*
82. Return to an address of the House of Commons, dated 14th March, 1898, for copies of all correspondence between the government of Canada, or any member thereof, and the United States government, either directly or through the British government or its representative at Washington, in reference to bonding or transit arrangements on the Pacific coast, and to the relief of destitute persons in the Yukon or Alaska districts. Also any reports of ministers to the government on these matters. Presented 25th May, 1899.—*Mr. Foster*.....*Not printed.*
83. Return to an order of the House of Commons, dated 8th May, 1899, for a return showing the number and names of all United States fishing vessels not possessing *modus vivendi* licenses to which concessions were granted in the Atlantic ports of Canada during the months of November and December, 1898, and January and February, 1899; together with all correspondence between the government or any member thereof and officers of the government, showing under what circumstances privileges were granted to any of said American vessels. Presented 26th May, 1899.—*Mr. McAlister*.....*Not printed.*
84. Return to an order of the House of Commons, dated 30th March, 1898, for a return of copies of all correspondence, instructions, reports, bills of costs and accounts, together with a statement of all moneys paid by the Dominion government in connection with the prosecutions arising out of the Dominion general elections of 1896 in the province of Manitoba. Presented 29th May, 1899.—*Mr. Roche*.....*Not printed.*
- 84a. Supplementary return to No. 84. Presented 2nd June, 1899.....*Not printed.*
85. Return to an order of the House of Commons, dated 7th June, 1897, for copies of all correspondence between the government and any parties in the county of Brant relating to the appointment of Dr. Levi Secord, of Brantford, Dr. McKee, of the same place, and Dr. Beer, formerly of Platts-ville, in the county of Oxford, to the positions of head physician and assistants to the Indians on the reservation in the township of Tuscarora, county of Brant. Presented 29th May, 1899.—*Mr. Clancy*.....*Not printed.*
86. Return to an order of the House of Commons, dated 19th April, 1899, for copies of all correspondence, from July 1, 1896, to the present date, between the Canadian government and the imperial authorities and between the Canadian government and the office of the high commissioner for Canada in London, relating to the cattle embargo. Presented 27th May, 1899.—*Mr. Montague*.  
*Printed for sessional papers.*
87. Copy of the order in council of the 7th October, 1898, providing for appointment of Mr. William Ogilvie as a commissioner, under the provisions of chapter 114, R.S.C., to investigate the charges and complaints referred to in such order in council; copy of the commission issued under the great seal of Canada, appointing Mr. Ogilvie such commissioner; copy of his report of the 27th April, 1899, and copies of the three public notices referred to in such report and attached thereto. Presented 30th May, 1899, by Hon. C. Sifton...*Printed for both distribution and sessional papers.*
- 87a. Copy of commission which issued in favour of William Ogilvie, Esq., under the provisions of chapter 114 R.S.C., to hold an investigation and take evidence under oath with regard to certain charges made against officials of the Dominion government in the Yukon territory; and copy of the evidence taken under such commission. Presented 9th June, 1899, by Hon. C. Sifton.  
*Printed for both distribution and sessional papers.*
- 87b. Copy of further report, dated the 27th May, 1899, of William Ogilvie, Esq., commissioner appointed under the provisions of chapter 114, R.S.C., and by commission issued thereunder, under the great seal of Canada, to hold an investigation and take evidence under oath with regard to certain charges made against officials of the Dominion government in the Yukon territory. Presented 7th July, 1899, by Hon. C. Sifton.....*Printed for both distribution and sessional papers.*
- 87c. Copy of the evidence which accompanied the further report of the 27th May, 1899, of William Ogilvie, Esq., commissioner appointed under the provisions of chapter 114, R.S.C., and by commission issued thereunder, under the great seal of Canada, to hold an investigation and take evidence under oath with regard to certain charges made against officials of the Dominion government in the Yukon territory; of which further report a copy was laid before the House of Commons upon the 7th July, 1899. Presented 12th July, 1899, by Hon. C. Sifton.  
*Printed for both distribution and sessional papers.*

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- 87*d.* Return to an order of the House of Commons, dated 27th July, 1899, for copy of a report of William Ogilvie, commissioner, relative to the values placed upon the steamers "Pingree" and "Low" for customs entry. Presented 27th July, 1899.—*Mr. Paterson*.....*Not printed.*
88. Return to an address of the Senate, dated 22nd May, 1899, for: 1. The original contract entered into between the government and the proprietors of the Drummond County Railway and the Grand Trunk Railway Company. 2. The present contract or agreement entered into between the same persons or companies. 3. A statement of all moneys paid to the proprietors of said railways from the date of the non-ratification of the first contract to the 31st March, 1899. 4. An account of the earnings and working expenses of the Drummond County Railway from the time of its being first worked in connection with the Intercolonial Railway to the 31st March, 1899. 5. And also an account of the total amount of money paid the Grand Trunk Railway Company for station accommodation, running powers over its line, for bridge extension, or for any purpose whatever in connection with the extension of the Intercolonial Railway system to Montreal. Presented 29th May, 1899.—*Hon. Sir Mackenzie Bowell*.....*Printed for sessional papers.*
- 88*a.* Return to an address of the Senate, dated 22nd June, 1899, calling for copies of any or all supplemental agreements and traffic arrangements entered into between the railway department of Canada and the Grand Trunk Railway Company, in connection with the contract entered into between the aforesaid parties for the extension of the Intercolonial Railway to the city of Montreal. Presented 26th June, 1899.—*Hon. Sir Mackenzie Bowell*.....*Printed for sessional papers.*
89. Return to an address of the House of Commons, dated 1st May, 1899, for copies of all petitions addressed to his excellency the governor general by members of the Turner administration in the province of British Columbia respecting the conduct of his honour the lieutenant governor of that province, and praying for the appointment of a commission to inquire into the same, together with all papers and correspondence connected with said petition; and also copies of all papers and correspondence in any way relating to the action of his honour the lieutenant governor of British Columbia in dismissing the Turner administration in the said province. Presented 31st May, 1899.—*Mr. Prior*.....*Printed for both distribution and sessional papers.*
90. Return to an address of the House of Commons, dated 19th April, 1899, for: 1. Copies of all correspondence had with the departments of inland revenue, during the last ten years, in relation to the compulsory inspection of potash at the port of Montreal. 2. Copies of all petitions presented on the same subject to the honourable the minister of inland revenue. Also copies of resolutions adopted by the Montreal board of trade and others, urging the government to adopt some measure to protect the Canadian trade in potash. Presented 31st May, 1899.—*Mr. Préfontaine*.....*Not printed.*
91. Return to an order of the House of Commons, dated 24th April, 1899, for: 1. Statement showing the quantity of Canadian tobacco grown and manufactured during each year since 1890. 2. The number of factories established since 1890—with the date in each instance—for the manufacture of Canadian tobacco, or of Canadian and foreign tobacco mixed. 3. Copies of all petitions, applications and memorials presented to the government since 1896 in relation to the duties on tobacco. Presented 31st May, 1899.—*Mr. Gauthier*.....*Not printed.*
92. Copy of the prospectus of the British Canadian Gold Fields of the Klondike Company, Limited, and copies of correspondence and other papers on file in the department of the interior, respecting the alleged connection of Mr. William Ogilvie with that company. Presented 31st May, 1899, by Hon. C. Sifton.....*Not printed.*
93. Return to an order of the House of Commons, dated 19th April, 1899, for statement showing the amounts voted and the amounts expended, under their proper headings, by the Dominion government on the harbour of Montreal during the last twenty-eight years; also the amounts voted and the amounts expended, under their proper headings, by the Dominion government on the harbour of Victoria, B.C., during the last twenty-eight years. Presented 31st May, 1899.—*Mr. Prior*.....*Not printed.*
94. Return to an order of the House of Commons, dated 15th May, 1899, for a return showing the actual expenditure on reconstruction of the pier at China Point, in the province of Prince Edward Island, the date of such payments, to whom the payments were made and the amount paid to each person; the amount paid for actual labour performed; the amount paid for material not used, and when; the quantity and kind of material purchased, and the price; the present actual condition of the pier; the progress made towards reconstruction; and all papers, correspondence and documents relating to or giving any information or particulars respecting the matters aforesaid. Presented 31st May, 1899.—*Mr. Martin*.....*Not printed.*



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95. Return to an order of the House of Commons, dated 10th May, 1899, for a return showing all sums expended to date upon the new wharf at Pointe Claire, P.Q. Also how far the works have progressed; a copy of the estimate of the cost of said wharf and statement showing how much it will cost to finish said wharf. Copies of all advertisements calling for tenders, as well as of all tenders and correspondence upon the subject. Presented 31st May, 1899.—*Mr. Monk*.....*Not printed.*
96. Return to an order of the House of Commons, dated 8th May, 1899, for copies of all correspondence, telegrams, papers, etc., in connection with the seizure of traps and ropes belonging to Messrs. Benjamin Compton & Co., of Belle River, in the province of Prince Edward Island, on 30th July, 1898, by the Dominion cruiser "Acadia." Presented 1st June, 1899.—*Mr. Martin*...*Not printed.*
97. Return to an address of the House of Commons, dated 17th May, 1899, for copies of all letters, telegrams, cablegrams, memorials and other papers received by the right hon. the prime minister of Canada, the Hon. J. I. Tarte, the minister of public works, or the Hon. A. G. Blair, the minister of railways and canals, from the Northern Commercial Telegraph Company, Limited, the Commercial Telegraph Construction Syndicate, Limited, or the W. T. Henley Telegraph Works, Limited, or from any director or directors, person or persons on behalf of or as representing any of these companies, or from the high commissioner for Canada in London, or from any other person or company respecting the construction by or for the Northern Commercial Telegraph Company, Limited, of a telegraph line between Skagway and Dawson, or of a submarine cable telegraph between some point in British Columbia and Skagway or Wrangel, or in any way relating to either of their objects. Also copies of all letters from the right hon. the prime minister of Canada, or from either of said other ministers to any of said companies or to any director or directors or other person or persons acting or purporting to act on behalf of any of said companies in any way relating to the construction of said telegraph line or cable line by, for or under the charter of the Northern Commercial Telegraph Company, Limited. Also copies of all correspondence between the Dominion government or any member or department thereof and the United States government at Washington or any department thereof bearing upon the laying and landing of a submarine cable between some point in British Columbia and Skagway or Wrangel or any point between these places. Presented 1st June, 1899.—*Mr. Prior*.....*Not printed.*
- 97a. Supplementary return to 97. Presented 26th June, 1899.....*Not printed.*
98. Return to an address of the Senate, dated 6th June, 1898, for a statement of the cost of the voyages undertaken in 1897 by the honourable the prime minister and by the honourable the solicitor general, to Europe, to the United States or elsewhere, together with the travelling expenses of their private secretaries or of any other persons composing their following. Presented 29th May, 1899.—*Hon. Mr. Landry*.....*Not printed.*
99. Protocol No. lxiii of the Joint High Commission, Washington, respecting the boundary between Alaska and Canada. Presented 5th June, 1899, by Sir Wilfrid Laurier.  
*Printed for both distribution and sessional papers.*
100. Return to an order of the House of Commons, dated 17th May, 1899, for copies of all papers, plans, maps, reports of fishery officers, correspondence and other documents relating to the existence of a dam across river Jésus, near the town of Terrebonne, and the construction of a fishway therein according to the requirements of the law. Presented 5th June, 1899.—*Mr. Fortin*...*Not printed.*
101. Return to an order of the House of Commons, dated 19th April, 1899, for a list of all persons employed since 1st August, 1896, by the minister of interior outside of the civil service employees in Ottawa, for purposes of immigration, detailing the names and post office addresses of the appointees, their rate of wages and allowances, the date and reason for dismissal where dismissals have taken place, and the country or districts in which their work has been performed. Presented 5th June, 1899.—*Mr. Foster*.....*Not printed.*
102. Return to an order of the House of Commons, dated 19th April, 1899, for a statement of all persons appointed to office or assigned to duties of any kind in the Yukon district since 1st August, 1896, giving the names, post office addresses, rate of salary and allowances or expenses of each person, the duties assigned, the date of his appointment, the date of resignation or dismissal, and the reason therefor in the case of each resignation or dismissal. The above statement not to include mounted police or Canadian militiamen, but to include paymasters in each branch. Presented 5th June, 1899.—*Mr. Foster*.....*Not printed.*
- 102a. Supplementary return to No. 102. Presented 9th June, 1899.....*Not printed.*
- 102b. Copies of orders in council relating to the Yukon. Presented 21st June, 1899, by Hon. C. Sifton.  
*Not printed.*

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- 103.** Return (in part) to an order of the House of Commons, dated 26th April, 1899, for a statement of all persons or commissions of inquiry appointed to inquire into the conduct of employees of the government since 1st August, 1896, giving the names of commissioners, their rate of pay and allowances, the aggregate total amount paid to each as pay and allowance, and the total expenses of each commission outside of pay and allowance; also the names and post office addresses of all persons dismissed on the reports of the commissioners (Marine and Fisheries). Presented 6th June, 1899.—*Mr. Foster*.....*Not printed.*
- 103a.** Supplementary return to No. 103. (Customs Department.) Presented 6th June, 1899.  
*Not printed.*
- 103b.** Return to an address of the House of Commons, dated 14th February, 1898, for a return showing names of commissioners appointed by the government to inquire into the conduct of all employees of the civil service in the province of Quebec since the 23rd of June, 1896, and the amount paid to each commissioner as salary or travelling expenses. Presented 14th June, 1899.—*Mr. Monk.*  
*Not printed.*
- 103c.** Return (in part) to an address of the Senate, dated 28th April, 1899, of the names of all commissioners appointed by order in council or otherwise since the 9th April, 1897, to inquire into and report upon charges preferred against any employee of the government, whether permanent or temporary, of offensive partisanship, or of any misconduct whatever. 2. The reports of said commissioners, or of commissioners previously appointed, not already brought down, and a statement showing the action taken by the government thereon. 3. The amounts paid each commissioner since the 9th April, 1897, in fees, *per diem* allowance, travelling expenses and incidentals of all kinds. 4. The names, ages, offices and salaries of all employees in the inside or outside service of the government, whether temporary or permanent, who since the 9th April, 1897, have been removed from office by dismissal, superannuation, or otherwise, whether on a report of a commission or otherwise, specifying in each case the grounds of dismissal, and the amount of superannuation or gratuity granted, if any; also the age, office, salary or remuneration of any and every person appointed in the place of, or as a consequence of every such removal. Presented 28th June, 1899.—*Hon. Sir Mackenzie Bowell.* ... *Printed in abstract form.*
- 103d.** Supplementary return to No. 103. (Post Office Department.) Presented 5th July, 1899.  
*Not printed.*
- 103e.** Supplementary return to No. 103c. Presented 4th July, 1899.....*See 103c.*
- 103f.** Supplementary return to No. 103c. Presented 5th July, 1899.....*See 103c.*
- 103g.** Supplementary return to No. 103. (Railways and Canals.) Presented 29th July, 1899.  
*Not printed.*
- 103h.** Supplementary return to No. 103c. Presented 28th July, 1899.....*See 103c.*
- 104.** Return to an address of the House of Commons, dated 19th April, 1899, for copies of all statements, claims, memoranda, correspondence, telegrams, etc., with the government of Prince Edward Island and a delegation from that province, in March last, consisting of the Honourable Hector C. Macdonald, Jas. W. Richards, and Benjamin Rogers, in regard to questions at issue between the government of Prince Edward Island and the dominion of Canada. Presented 6th June, 1899.—*Mr. Martin*.....*Printed for sessional papers.*
- 105.** Return to an address of the House of Commons, dated 19th April, 1899, for all papers and correspondence, including orders in council, tenders and contracts in connection with the engraving, printing and supply of paper for the denominational postal notes, with a sample of the notes printed. Presented 6th June, 1899.—*Mr. Foster*.....*Not printed.*
- 105a.** Return to an order of the House of Commons, dated 19th April, 1899, for a statement of all separate issues of postal stamps, cards, or notes since 1st January, 1897, noting those that have gone out of use, the quantity and date of each issue, and a sample of each issue, and giving in the case of the jubilee stamps, the cost and amount of cash returned to the treasury for each denomination. Presented 12th June, 1899.—*Mr. Foster* . . . . .*Not printed.*
- 105b.** Return to an order of the House of Commons, dated 24th April, 1899, for a copy of contract for the production of postal notes, and the cost of such per 1,000 of each denomination, exclusive of paper, and for all correspondence between the contractor, the government and the queen's printer. Also for a statement of the number of reams of paper made for each denomination, by whom ordered to be made, where made, and name of manufacturer, and who has now possession of the Dandy rolls from which the paper was made. And also the following statements: Who furnished the electrotypes, and where they were made, the date of first delivery of postal notes, and amount of



## CONTENTS OF VOLUME 14---*Continued.*

- security given by the contractor, and whether the contractor has supplied the necessary accommodation for government clerks for superintendence and storage for an ample supply of paper, Presented 12th June, 1899.—*Mr. Foster*..... *Not printed.*
- 105c. Return (in part) to an order of the House of Commons, dated 29th May, 1899, showing in detail all dies, plates or other parts, wholly or partially engraved, entered or imported by or for the use of the American Bank Note Company and the British American Bank Note Company, to be used in the making of bank notes, postage stamps, postal notes and inland revenue stamps for the government, with the valuation and amount of duty charged and collected. Presented 12th June, 1899.—*Mr. Foster*..... *Not printed.*
- 105d. Return to an order of the House of Commons, dated 19th April, 1899, for all correspondence had with the post office department, or any member of the government, in reference to the quality of the post cards issued by the post office department since 1st July, 1896. Presented 19th June, 1899.—*Mr. Foster*..... *Not printed.*
106. Return to an order of the House of Commons, dated 24th April, 1899, for number of jubilee stamp plates engraved and their denominations, and cost of such plates. Cost of jubilee stamps per 1,000 complete. Also the number of plates engraved for the greater empire stamp, and the cost per plate, with the cost per 1,000 stamps complete. Presented 6th June, 1899.—*Mr. Foster.*  
*Printed for sessional papers.*
107. Return to an address of the House of Commons, dated 8th May, 1899, for copies of all papers, including affidavits, and of all correspondence between the government and the government or public officials of the United States or other parties, concerning the case of Thomas Meagher, who was arrested by United States customs officers in Canadian waters, in the river St. Clair, on 19th August, 1898; was held in custody and grossly ill-treated by said officials for some time and afterwards imprisoned, and who was finally discharged without trial by order of the United States government. Presented 6th June, 1899.—*Mr. Cowan*..... *Not printed.*
108. Return of the names and salaries of all persons appointed to or promoted in the civil service during the calendar year 1898. Presented 6th June, 1899, by Sir Wilfrid Laurier.  
*Printed for sessional papers.*
109. Return to an address of the House of Commons, dated 14th March, 1898, for copies of all correspondence, reports, orders in council and instructions in reference to the admission of foreign countries to commercial privileges under the so-called preferential clause of the tariff of 1897. Presented 6th June, 1899.—*Mr. Foster*..... *Printed for sessional papers.*
110. Documents relating to the recent disallowance of certain statutes passed by the legislature of British Columbia. Presented 7th June, 1899, by Sir Wilfrid Laurier.  
*Printed for both distribution and sessional papers.*
- 110a. Further documents relating to the recent disallowance of certain statutes passed by the legislature of British Columbia. Presented 21st June, 1899, by Sir Wilfrid Laurier..... *Not printed.*
111. Return to an order of the House of Commons, dated 18th April, 1898, for a return showing by departments, the expenditure in each year, beginning 1st July, 1890, for salaries in the outside service of the post office, customs and inland revenue departments, detailed by posts and sub-posts in the case of the inland revenue and customs, and by post offices in case of employees in the postal service, of all employees, whether temporary or permanent. Presented 7th June, 1899.—*Mr. McMullen*..... *Not printed.*
112. Return to an address of the House of Commons, dated 15th May, 1899, for copies of all complaints, referred to on page 3 of the report of the deputy minister of interior (Annual Report of the Department of the Interior for the year 1897), minutes of council, commission instructions and report of Mr. Archer Martin, the commissioner, respecting the New Westminster crown timber office. Presented 9th June, 1899.—*Sir Charles Hibbert Tupper*..... *Not printed.*
113. Return to an address of the House of Commons, dated 30th March, 1898, for copies of all instructions given by the government of Canada, or any department thereof, to Charles Russell, Esq., solicitor, London, England, or to the firm to which he belongs, or to any member thereof, in relation to any case or business in which the said government or any department thereof was or is concerned; also copies in detail of all bills of costs or accounts rendered by the said persons to the government or any department since 1st July, 1896. Presented 9th June, 1899.—*Mr. Bergeron.*  
*Printed for sessional papers.*
114. Return to an order of the House of Commons, dated 29th May, 1899, for copies of all correspondence between the Northern Commercial Telegraph Company and the department of public works during the last six months. Presented 12th June, 1899.—*Mr. Maxwell*..... *Not printed.*



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115. Return to an order of the House of Commons, dated 15th May, 1899, for copies of all correspondence, telegrams, reports, contracts, tenders and all other papers and documents in connection with the change in carrying the mails for Prince Edward Island between the Intercolonial Railway and Cape Tormentine during the past winter. Presented 12th June, 1899.—*Mr. Martin.* *Not printed.*
116. Return to an address of the House of Commons, dated 10th May, 1899, for copies of all petitions, correspondence, telegrams and instructions in reference to the granting of a bonded warehouse to John Gow Scrimgeour at Cardigan Bridge, Prince Edward Island. Presented 12th June, 1899.—*Mr. Macdonald (King's).*.....*Not printed.*
117. Return to an order of the House of Commons, dated 29th May, 1899, for copies of all correspondence between the government or any member thereof, or any person or official in behalf of the same, and the Canada Eastern Railway Company, or any person in behalf thereof, and of any reports and papers in connection with any proposal to purchase for the government the said railway. Presented 12th June, 1899.—*Mr. Foster.*.....*Not printed.*
118. Return to an address of the House of Commons, dated 8th May, 1899, for copies of all orders in council, and all papers and correspondence had with the department of railways and canals or the minister of railways by the officers of the Central Railway Company of New Brunswick, or by any contractors or persons concerned in the construction of the said Central Railway Company of New Brunswick, or any one in their behalf, in connection with the payment of subsidy or grants made to the said company. Presented 13th June, 1899.—*Mr. Foster.*.....*Not printed.*
119. Return to an address of the House of Commons, dated 29th May, 1899, for copies of all correspondence, telegrams and reports that have passed between the Dominion government and the provincial government of British Columbia, or any person or persons acting on their behalf, in regard to the Songhees Indian reserve at Victoria, B.C., since 1st June, 1897. Presented 13th June, 1899.—*Mr. Prior.*.....*Not printed.*
120. Return to an order of the House of Commons, dated 15th May, 1899, for copies of all correspondence between the minister or any officials of the department of interior and Mr. A. Soper, of Port Perry, or other persons in reference to the suppression of the sale of liquor to the Scugog Indians. Presented 13th June, 1899.—*Mr. Foster.*.....*Not printed.*
121. Return to an order of the House of Commons, dated 8th May, 1899, for copies of all contracts or agreements entered into by or with the postmaster general or the post office department or her majesty or the government of Canada for the carriage of the mails into or out of the Yukon territory or district or any part thereof; and also copies of all advertisements for tenders for the carriage as aforesaid of such mails, and all tenders received by the postmaster general, the post office department or the government of Canada or her majesty the queen, for the carriage of mails into or out of the Yukon territory or district, also copies of all reports, letters and communications in writing from the post office inspector at Victoria, or any other post office inspector, or any other officer of the post office department with respect to such tenders or advertisements or with respect to the acceptance or rejection of any of the said tenders. Presented 13th June, 1899.—*Sir C. Hibbert Tupper.*.....*Not printed.*
122. Return to an order of the House of Commons, dated 29th May, 1899, for copies of all correspondence, papers, petitions, etc., in connection with the resignation of Dr. Morris as postmaster at Dundas, Prince Edward Island, and the appointment of his successor and persons applying for the position. Presented 13th June, 1899.—*Mr. Macdonald (King's).*.....*Not printed.*
123. Return to an order of the House of Commons, dated 8th May, 1899, for: 1. A return showing the number of letter carriers who were employed in the post office in Victoria, B.C., in the year 1895-6, 1896-7 and 1897-8 respectively and the number employed at the present time. 2. The salary paid to each letter carrier employed in 1895-6 and salaries paid in the present year. 3. The provisional allowance granted to said letter-carrier in 1895-6 and in 1896-7 and 1897-8. Presented 13th June, 1899.—*Mr Prior.*.....*Not printed.*
124. Return to an order of the House of Commons, dated 8th May, 1899, for a statement showing the weight of every issue of the daily and weekly publications issued in Toronto and Montreal since the introduction of the law requiring that all publications must be weighed and stamped before the acceptance of same at the post office of issue of paper. Presented 13th June, 1899.—*Mr. Quinn.*  
*Not printed*



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125. Return to an order of the House of Commons, dated 26th April, 1899, for a statement in detail of all sums expended on account of the joint high commission between Great Britain and the United States since its inception to date, with the names of all persons connected therewith as commissioners, secretaries, clerks and attendants and the rate and total amounts of compensation of each as salary, allowances and expenses itemized. Presented 14th June, 1899.—*Mr. Foster.* *Not printed.*
126. Return to an address of the House of Commons, dated 18th April, 1898, for copy of all instructions, correspondence by letter or telegram between the government or any department or officer thereof and the representative of the crown, or any other person in relation to the postponement of the hearing of the appeal before the court of queen's bench, in the case of the Queen *vs.* Coulombe and others during the last term of the said court at Quebec, and of all documents in relation thereto. Presented 14th June, 1899.—*Mr. Casgrain.* *Not printed.*
127. Return to an address of the House of Commons, dated 1st May, 1899, for copies of all correspondence, petitions, resolutions and other papers in possession of the government, relating to the proposed branch railway from Southport to Murray Harbour and other proposed railway branches in the province of Prince Edward Island. Presented 14th June, 1899.—*Mr. Martin.* *Not printed.*
128. Return to an order of the House of Commons, dated 8th May, 1899, showing: 1. Settlements (if any) that have been made by the department of railways and canals since and during the last session, with those parties who suffered from the construction of the Roche-Fendue and Calumet dams in 1883. 2. The names of the valuers who adjusted the said claims, and by whom their appointment was recommended. Presented 14th May, 1899.—*Mr. Poupore.* *Not printed.*
129. Return to an order of the House of Commons, dated 26th April, 1899, for all papers and correspondence in connection with the claim of the British American Bank Note Company for the balance alleged to be due to the company for contract work done for the post office department. Presented 15th June, 1899.—*Mr. Foster.* *Not printed.*
130. Return to an order of the House of Commons, dated 10th May, 1899, showing the names of persons appointed to positions in the Toronto post office since 13th July, 1896, the date of each such appointment, the salary paid to each such person and the office to which each such person was appointed. Presented 15th June, 1899.—*Mr. Clarke.* *Not printed.*
131. Return to an address of the Senate, dated 21st March, 1898, for copies of all reports and surveys made by officers of the department of railways and canals, regarding the straightening of certain curves on the Prince Edward Island Railway at or near North Wiltshire, and also a statement showing: 1. The amount expended on straightening the said curves, and to whom paid. 2. How was the expenditure made, by tender or by day's work. 3. The nature and extent of the changes made. 4. What further changes, if any, are contemplated. Presented 13th June, 1899.—*Hon. Mr. Ferguson.* *Not printed.*
132. Return to an address of the Senate, dated the 25th May, 1899, for certified *verbatim* copies of all letters or other documents written to the minister or any official connected with the department of the interior, or to any member of the government, by H. H. Norwood, the person appointed by the government to the position of gold inspector in the Yukon district. Presented 13th June, 1899.—*Hon. Mr. Primrose.* *Not printed.*
133. Return (in part) to an address of the Senate, dated the 23rd March, 1899, showing the amounts of customs and excise duties collected on goods imported into that part of the Dominion known as the Yukon and Klondike country, from the first day of September, 1898, to the first day of March, 1899, specifying the character of the goods so imported and the countries from whence imported; together with a statement showing the quantity and character, as far as practicable, of Canadian goods sent to the said Yukon district during the same period. Presented 13th June, 1899.—*Hon. Sir Mackenzie Bowell.* *Not printed.*
134. Return to an address of the House of Commons, dated 8th May, 1899, for copy of a memorial signed by the late Honourable John Norquay, president of the executive council of the province of Manitoba, on behalf of said council, praying to be heard before her majesty in council on the interference of the governor general in council in the practice of disallowing acts clearly within the power of local legislature and asking that the same be discontinued; which memorial was addressed to the honourable the secretary of state of Canada with request that the same be transmitted to her majesty in council; also copies of all correspondence, reports to or from, and orders in council in connection therewith. Presented 16th June, 1899.—*Mr. LaRivière.*

*Printed for sessional papers.*

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135. Return to an order of the House of Commons, dated 18th April, 1898, for a return showing the amount spent by the government in the financial years 1896-7, 1897-8, and the proposed expenditure for the year 1898-9 on private piers and wharfs, and piers and wharfs not under government control and not the property of Canada, together with the names of such piers and wharfs and the owners thereof, as well as the sums spent on each for years mentioned. Presented 16th June, 1899.—*Mr. Martin*.....*Not printed.*
136. Return (in part) to an order of the House of Commons, dated 15th May, 1899, for a return of all reports and recommendations of the commission appointed to investigate and settle claims for losses arising out of the Saskatchewan rebellion of 1885; also a statement of all claims presented, the amount paid in each case, also all claims presented and not entertained. Presented 20th June, 1899.—*Mr. Davis*.....*Not printed.*
137. Return to an order of the House of Commons, dated 17th May, 1899, for copies of all instructions, correspondence and reports, accounts and vouchers, for expenses connected with the expedition of Chief Engineer Coste, of the department of public works, referred to in the annual report of the minister of marine and fisheries, 1898, page 7, and also connected with the visit subsequently paid to England by Mr. Coste in the same year. Presented 20th June, 1899.—*Sir C. Hibbert Tupper*.  
*Not printed.*
138. Return (in part) to an order of the House of Commons, dated 29th May, 1899, for copies of all correspondence, telegrams and reports between the departments of militia and defence and justice or their agents, and the following claimants for compensation and damages in respect of the erection of fortifications at Macaulay Point, British Columbia, viz.: Fred. Bell, J. Jardine, W. F. Bullen, R. W. Reford, Henry Moss, William Moss, J. G. Tiarks, Charles Kent, Thornton Fell, Andreas Keating (B. L. Ker), Hans Ogilvy Price, H. F. Bishop, S. J. Pitts, and any others that may have presented claims in regard to same. Presented 21st June, 1899.—*Mr. Prior*.  
*Not printed.*
- 138a. Supplementary return to No. 138. Presented 29th June, 1899.....*Not printed.*
139. Return to an address of the House of Commons, dated 19th April, 1899, for copies of the reports of Walter Shanly, C.E., and T. C. Keefer, C.E., in connection with the proposed large locks at Iroquois and Farran's Point. Presented 23rd June, 1899.—*Mr. Taylor*.....*Not printed.*
140. Return to an order of the House of Commons, dated 19th April, 1899, for: 1. Statement of the expenditure connected with the royal military college, Kingston, every year since its foundation. 2. Of the number of graduates in each year, and of their present place of residence and occupation, as far as known to the college authorities. 3. Of all general orders or regulations relating to the employment of these graduates in the permanent corps, volunteers or other branches of the public service. Presented 23rd June, 1899.—*Mr. Casey*.....*Not printed.*
141. Return to an order of the House of Commons, dated 18th April, 1898, for copies of all instructions, correspondence, etc., in relation to the construction of wharfs at Mistassini and St. Méthode (Tékouabé); a detailed statement showing the quantity of timber, iron and stone used in the said works; by whom the said articles were furnished; the prices paid therefor to each person; the names of the carpenters and framers employed and the prices paid them per day and how much was received in cash by them, as also by the day labourers who worked with them; all other expenditure in relation to the said works; copies of all correspondence in relation to the contracts awarded to Messrs. Têtu & Savard, of St. Félicien, for making timber for the St. Méthode wharf; copies of the said contracts and of all further correspondence as to presenting payment of their accounts; a statement of the quantity of timber prepared by them, and of the amount paid to them personally. Copies of instructions issued to J. B. Carbonneau, chief carpenter at the Mistassini and St. Méthode wharfs; correspondence as to cancelling of his instructions at St. Méthode and the appointment of a chief carpenter in his place. Presented 26th June, 1899.—*Mr. Casgrain*.  
*Not printed.*
142. Return to an order of the House of Commons, dated 30th March, 1898, showing the amounts paid to each and all persons who worked at the Roberval pier in 1896; the number of days worked; the prices paid; the quantity of timber and iron furnished, and the prices paid therefor; the place where the same was obtained; copies of all instructions, correspondence, etc., in relation to the said work. Presented 26th June, 1899.—*Mr. Casgrain*.....*Not printed.*



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143. Return to an order of the House of Commons, dated 27th April, 1899, for a statement of sums paid as travelling expenses to the judges of the superior court for the province of Quebec coming from outside districts to sit in the city of Montreal. 1. From the 1st of January, 1898, up to the coming into force of the statute 61 Victoria (Canada), chap. 52. 2. Since the coming into force of said statute down to the 1st of March, 1899. Presented 26th June, 1899.—*Mr. Monk. Not printed.*
144. Return to an order of the House of Commons, dated 29th May, 1899, for copies of all tenders opened the 14th day of May, 1897, for works on the Farran's Point canal, showing the prices of different tenderers for each item and the approximate quantities upon which the tenders were extended, also the lump sum of each tender. Presented 27th June, 1899.—*Mr. Clancy..... Not printed.*
145. Return to an order of the House of Commons, dated 14th February, 1898, for correspondence and reports respecting increased wharf accommodation at Pictou, Nova Scotia, in 1892 and since. Presented 28th June, 1899.—*Sir C. Hubbert Tupper .. . . . Not printed.*
146. Return to an order of the House of Commons, dated 29th May, 1899, for copies of all reports of any survey held during 1897 or 1898 of Neufrage Pond, King's county, Prince Edward Island. Presented 28th June, 1899.—*Mr. Macdonald (King's)..... Not printed.*
147. Return to an order of the House of Commons, dated 10th May, 1899, for copies of all unexpired leases and unexpired renewals and modifications of leases, and of all papers and plans relating thereto of all water lots, water power and hydraulic privileges in and along that portion of the river Ottawa and its various channels within the city of Ottawa, from the westerly boundary of the said city to the line of Kent street, produced into the Ottawa river, and commonly known as the Chaudière, issued by the government to any person, persons or company, and for plans showing the position of such water lots, water power and hydraulic privileges. Also for a statement of the amount of power each lessee is entitled to use, and the date of the termination of the lease under which he is entitled to use it. Presented 28th June, 1899.—*Mr. Copp..... Not printed.*
148. Certain correspondence relating to the franchise of the different provinces as the franchise for the elections to the House of Commons. Presented (Senate) 27th June, 1899, by Hon. Mr. Mills.  
*Not printed.*
149. Return to an order of the House of Commons, dated 10th May, 1899, giving the names of all the weirs now under license in the county of Charlotte, in the province of New Brunswick, with location of each, with date said licenses were issued, and with the name or names of the licensees of said weirs; also the names of all weirs licensed during 1898 that were not built and the names of licensees of said weirs, and the number of years said licenses have been granted without weirs having been built by such licensees. Presented 29th June, 1899.—*Mr. Ganong..... Not printed.*
150. Return to an order of the House of Commons, dated 8th May, 1899, showing: 1. The canals and river works therewith forming the connection between the great lakes and deep water navigation at Montreal which were completed on 1st July, 1896, the depth of water in each, and the cost of each to that date. 2. The canals and connected river improvements which at that date were in course of construction or enlargement, showing the work which had been done on each, the cost to 1st July of such construction or enlargement, and the estimated cost to complete the contracts then existing and amount of each; the new contracts made since 1st July, 1896, covering work other than that completed or under contract at that date and the amount of each. 3. The estimated cost of completing these works to the proposed depth over and above the amounts involved in contracts existing on 1st July, 1896. Presented 29th June, 1899.—*Mr Foster..... Not printed.*
151. Return to an order of the House of Commons, dated 10th May, 1899, showing the number of contracts entered into by the government since the 30th June, 1897, in which there is a clause prohibiting "sweating"; the total amount involved in such contracts; the name of the respective department in which these contracts have been awarded; the names of the companies, or firms, or individuals to which such contracts have been given. Presented 29th June, 1899.—*Mr. Clarke.*  
*Printed for sessional papers.*
152. Return to an address of the Senate, dated 23rd March, 1899, showing: 1. The number of persons in the employment of the post office department on the 30th of June, 1896, and the total amount paid to said employees for the year ending said 30th June, 1896. 2. A similar return giving the same information for the year ending 30th June, 1898. 3. The number of employees in the said service on the 12th day of July, 1896, and on the 16th February, 1899. Presented 20th June, 1899.—*Hon. Sir Mackenzie Bowell..... Not printed.*



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153. Return to an address of the House of Commons, dated 29th May, 1899, for copies of all orders in council, applications, correspondence, papers, plans, etc., in the departments of interior and marine and fisheries, respecting 37-29 acres or thereabouts of foreshore and tidal lands about two miles below Steveston, British Columbia, situate west and immediately adjoining section 9, range 7 west, block 3 north, N.W.D. Presented 30th June, 1899.—*Sir Charles Hibbert Tupper.*  
*Not printed.*
154. Return to an order of the House of Commons, dated 19th June, 1899, showing: 1. The amount paid in the province of Prince Edward Island since 1896 as fines for the infraction of the lobster fishery regulations, the names of persons so fined, and the amount of the fine in each case. 2. A detailed statement of the fines collected. 3. The disposition of those fines. 4. The cost of prosecution in each case. 5. The names of fishery officers receiving a share of such fines, and the amount received in each by any officer. 6. The magistrate or other officer who tried such cases. Presented 30th June, 1899.—*Mr. Martin.*.....*Not printed.*
155. Return to an order of the House of Commons, dated 19th June, 1899, for copies of all correspondence, petitions, reports, telegrams, etc., in connection with the proposed change of mail arrangements for Grand View, in Prince Edward Island. Presented 4th July, 1899.—*Mr. Martin.*  
*Not printed.*
156. Return to an address of the Senate, dated 19th April, 1899, for a statement showing: 1. What was the total average amount paid to the Ottawa Gas Co., per annum, for lighting the various government buildings during the two years ending 1898? 2. What is the total cost per annum, by the present system of lighting? 3. Were tenders called for lighting the various buildings by either gas or electricity? To what company was the contract for lighting awarded? 4. What is the total number and power of incandescent electric lights now installed in all the public buildings in Ottawa, and cost of installation, including wiring and all other apparatus? 5. What was the number and power of electric lights operated by the government electric light plant, and annual cost of the same, during the two years ending 1898? 6. What is the original cost and present value of all government electrical plant and boilers in the public buildings in Ottawa? How many men are employed to operate them? 7. Were tenders called for the wiring of any or all the government buildings in Ottawa and the supply of all electrical appliances necessary for the same? From whom were offers received and what were the respective amounts of such offers? 8. How was the parliamentary appropriation of \$75,000 for extending the government lighting plant, and the purchase of certain pumps for fire purposes, expended? What are the items of such expenditure, and to whom paid? Presented 4th July, 1899.—*Hon. Sir Mackenzie Bowell.*.....*Not printed.*
157. Return to an order of the House of Commons, dated 19th June, 1899, for copies of all correspondence, petitions, etc., in reference to the recent appointment of a postmaster at Clifton, New London, in the province of Prince Edward Island. Presented 10th July, 1899.—*Mr. Martin.*....*Not printed.*
158. Return to an order of the House of Commons, dated 19th April, 1899, for copies of specifications and plans for the construction of deep water terminal facilities at St. John, N.B., including wharfs, warehouses, elevators, tracks, etc., together with copies of tenders for the said works and of any contracts entered into therefor. Presented 18th July, 1899.—*Sir Charles Tupper.*  
*Not printed.*
159. Return to an address of the House of Commons, dated 19th April, 1899, for copies of the contract and specification in connection with the North Channel improvement, below Prescott, with copies of any supplementary agreement or agreements entered into with the contractor; also plans showing the location on which the contract was let and the present location. Presented 18th July, 1899.—*Mr. Taylor* .....*Not printed.*
160. Return to an address of the Senate, dated 20th April, 1899, for all correspondence with the government, or any member thereof, relating to the subject of the introduction of a prohibitory liquor law by the government, together with all affidavits and other documents having relation to the vote cast upon the question of prohibition on the 29th day of September, 1898, and the alleged frauds in connection therewith. Presented 18th July, 1899.—*Hon. Sir Mackenzie Bowell.*  
*Not printed.*
161. Return to an address of the Senate, dated the 21st June, 1899, for copies of all correspondence between the department of agriculture, the Prince Edward Island Fruit Growers' Association and the provincial premier, Hon. Mr. Farquharson, with reference to experiments in fruit culture now being carried on in Prince Edward Island; said correspondence to include all instructions to Mr. Kinsman with reference to the nature of the work to be undertaken and the selection of orchards for the purpose of carrying on said experiments. Presented 18th July, 1899.—*Hon. Mr. Ferguson.*.....*Not printed.*



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162. Return to an order of the House of Commons, dated 26th June, 1899, for: 1. Copies of all papers, documents, correspondence, letters, etc., in connection with the appointment of Dr. Hall, veterinary surgeon, of Quebec, for the purpose of inspecting cattle for the discovery of tuberculosis at Hébertville or elsewhere in the county of Chicoutimi. 2. In connection with any part of said work done by his brother. 3. Statement of the number of herds which he or his brother examined. 4. Statement of sums of money paid for such inspection, travelling expenses, carters, aids or assistants. 5. Statement of any sum or sums paid to David Ouellet, of Hébertville, in connection with said inspection. Presented 19th July, 1899.—*Mr. Gasgrain*..... *Not printed.*
- 162*a*. Supplementary return to No. 162. Presented 26th July, 1899..... *Not printed.*
163. Return to an address of the House of Commons, dated 26th June, 1899, for a copy of the final estimate or settlement of section number three (3) of the Lachine canal enlargement of 1875-1880 in detail. Presented 20th July, 1899.—*Mr. McInerney* ..... *Not printed.*
- 163*a*. Return to an order of the House of Commons, dated 26th June, 1899, for copies of the plans and profiles of the substructures of the highway and railroad bridges across the Lachine canal at Wellington street, Montreal, the dimensions to be in figures, also *esometrical projections* of the pivot and rest piers (abutments), showing the figured dimensions and elevations of the several parts, including turntable, circular girder, wheels and machinery. Presented 20th July, 1899.—*Mr. McInerney* ..... *Not printed.*
- 163*b*. Return to an address of the House of Commons, dated 26th June, 1899, for a copy of the report of the royal commission appointed to inquire into the construction of the Wellington street and Grand Trunk bridges across the Lachine canal at Montreal. Presented 29th July, 1899.—*Mr. McInerney*..... *Not printed.*
164. Return to an order of the House of Commons, dated 30th March, 1898, showing: 1. How many were employed on the dredge "Prince Edward" as caretakers or otherwise since she went into winter quarters at the end of last season. 2. How many were employed during the winter 1896-97. 3. How many cubic yards were removed by dredge "Prince Edward" during the seasons of 1896 and 1897 respectively, and the cost per cubic yard each season. 4. The number of days the dredge "Prince Edward" was doing actual work in each month during the seasons of 1896 and 1897 respectively. 5. The cost of repairs for the dredge "Prince Edward" for the years ending 31st December, 1896 and 1897 respectively. Also all correspondence in connection with the dismissal of John N. Macdonald from dredge "Prince Edward," and the appointment of his successor. Presented 22nd July, 1899.—*Mr. Macdonald (King's)*. .... *Not printed.*
165. Return to an address of the Senate, dated 25th April, 1899, for: 1. The number of acres of land set apart for the purpose of education in the province of Manitoba and in the North-west Territories, respectively, under the authority of chapter 54, Revised Statutes of Canada, section 23. 2. The number of acres sold in Manitoba and the North-west Territories, the amount received in payment therefor, and the amount now due thereon. 3. The total sum now at the credit of said fund held by the dominion of Canada, how invested, and the rate of interest paid thereon. 4. The amount advanced out of said principal sum in aid of education in the province of Manitoba and the North-west Territories. 5. The sum recouped to the said principal out of the proceeds of the sale of lands set apart for the purpose of education, and the amount now due to the said principal sum. 6. And all correspondence relating to any further advances out of said school fund, either to Manitoba or the North-west Territories. Presented 26th July, 1899.—*Hon. Sir Mackenzie Bowell*..... *Not printed.*
166. Return to an address of the House of Commons, dated 19th June, 1899, for a copy of all correspondence between the government and the boards of trade of the Dominion in regard to the passage of an insolvency law. Presented 31st July, 1899.—*Mr. Monk*..... *Not printed.*
167. Return to an order of the House of Commons, dated 31st July, 1899, for a statement of the amounts paid for medical attendance and medicines for Indians in the electoral district of Yale and Cariboo during the years 1896-7, 1897-8 and 1898-9, showing to whom payments were made and amounts paid to each. Presented 31st July, 1899.—*Hon. C. Sifton* ..... *Not printed.*
168. Return to an order of the House of Commons, dated 25th April, 1898, for: 1. Copies of all tenders in 1897 for the supply of drugs to the North-west mounted police at Prince Albert and Battleford, and the name of the successful tenderer and a copy of the contract. 2. Copies of all tenders for the supply of drugs to the mounted police at Prince Albert and Battleford, for the year 1898; the name of the successful tenderer, and a copy of the contract. Presented 7th August, 1899.—*Mr. Davin*..... *Not printed.*

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- 169.** Return to an order of the House of Commons, dated 8th August, 1899, for copy of correspondence in relation to the suit Esquimalt and Nanaimo Railway Company, versus the New Vancouver Coal Company, as to the ownership of the coal underlying Nanaimo harbour. Presented 8th August, 1899.—*Hon. C. Sifton*..... *Not printed.*
- 170.** Return to an order of the House of Commons, dated 25th July, 1899, for a copy of the report of the hon. the minister of justice, on which the order in council was passed for the discharge from prison of J. K. Skelton and T. Dewan, tried and convicted of perjury before Mr. Justice Wetmore, at Battleford, October, 1897, and subsequently sentenced to a term of imprisonment; also copy of affidavits supporting the application for the discharge of the aforesaid Skelton and Dewan. Presented 8th August, 1899.—*Mr. Davin*..... *Not printed.*
- 171.** Return to an address of the House of Commons, dated 24th April, 1899, for: (a) Copy of all correspondence or orders in council relating to the entering into an agreement by the government, or department of railways and canals, for the operating by the same of the Baie des Chaleurs Railway during the fiscal year 1896, and a copy of the contract governing the same. (b) A statement containing the period during which the road was so operated, also the total expenses directly or indirectly connected with such operation, and the total revenue derived from the same. Presented 8th August, 1899.—*Mr. Bergeron*..... *Not printed.*
- 172.** Return to an address of the House of Commons, dated 24th April, 1899, for: (a) Copy of tenders for the letting of sections four, five, six and seven of the Soulanges canal; also a copy of advertisement for the same, and a statement of tenders moneyed out. (b) Copy of tenders for the reletting of sections four, five, six and seven of the Soulanges canal; also a copy of advertisement for same, and a statement of tenders moneyed out. (c) Copy of all correspondence or orders in council directly or indirectly relating to the letting or the reletting of the above sections. Presented 8th August, 1899.—*Mr. Bergeron*..... *Not printed.*
- 173.** Return to an order of the House of Commons, dated 8th August, 1899, for copy of correspondence relative to the question of reducing the dock charges at Esquimalt dry dock. Presented 8th August, 1899.—*Hon. W. S. Fielding*.... *Not printed.*
- 174.** Return to an address of the House of Commons, dated 10th July, 1899, for copy of all papers in connection with the applications made for, and the consideration of the commutation of the sentence of death on Marion Brown for murder. Presented 9th August, 1899.—*Mr. Wallace.*  
*Not printed.*
- 175.** Return to an address of the House of Commons, dated 8th May, 1899, for copies of all cablegrams, papers, correspondence and despatches or other writing upon which the right honourable the prime minister of Canada based the statement in the house of commons on 10th June, 1898, as follows: "I have the authority of the secretary of state for the colonies to state that he approves of the principles on which the governor general acted, as based on the facts set forth in the letter of his excellency to Sir Charles Tupper." Presented 11th August, 1899.—*Sir Charles Tupper.*  
*Not printed.*











62 Victoria.

Sessional Papers (No. 9.)

A. 1899

CANADA

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REPORT

OF THE

MINISTER OF PUBLIC WORKS

ON THE

WORKS UNDER HIS CONTROL

FOR THE FISCAL YEAR ENDED 30TH JUNE, 1898

SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 36, SECTION 37,  
OF THE REVISED STATUTES OF CANADA

*PRINTED BY ORDER OF PARLIAMENT*



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE QUEEN'S MOST  
EXCELLENT MAJESTY

1899

[No. 9—1899.]





## Department of Public Works

*To His Excellency the Right Honourable Sir Gilbert John Elliot Murray-Kynynmond,  
Earl of Minto, G.C.M.G., &c., &c., &c., Governor General of Canada.*

MY LORD,

I have the honour to lay before Your Excellency the Report of the Department of Public Works of Canada, for the fiscal year ended 30th June, 1898.

I have the honour to be,

My Lord,

Your Excellency's most obedient servant,

J. ISRAEL TARTE,

*Minister of Public Works.*

OTTAWA, 8th June, 1899.





# Department of Public Works.

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do III.—CHIEF ARCHITECT'S REPORT.  
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do V.—GENERAL SUPT. OF TELEGRAPH'S REPORT.  
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# Department of Public Works

REPORT, MINISTER OF PUBLIC WORKS, 1897-98.

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### CHIEF ENGINEER'S REPORT.

S. Ship Channel, River St. Lawrence between Montreal and Quebec, November 1897—  
Scale: 1 inch =  $4\frac{1}{4}$  miles.

W. Part of Lake Winnipeg and Red River, in connection with improvements for  
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—————:O:—————

### SPECIAL APPENDIX, "A."

I. "Denison hydrograph" put up on Queen's Wharf, Toronto harbour, in the spring of  
1898— $\frac{1}{10}$  full size.

II. Interesting undulations on Lake Ontario, recorded by the "Denison hydrograph"  
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—————:O:—————

### SPECIAL APPENDIX, "B."

I. "Tacheomètre Sanguet" (auto réducteur) as adapted to Geodetic Levelling in connec-  
tion with a new geodesic rod, by R. Steckel, Eng. in charge Canadian Geodetic  
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II. New geodesic rod with accessories, for use in connection with the Sanguet tacheo-  
meter,— $\frac{1}{10}$  full size.

III. Details of new tacheometer rod and accessories— $\frac{1}{2}$  full size.

46, 47, 48, 49 and 50. Five typical double pages of proposed field book for tacheometric  
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and computations required.

5 and 6. Two typical double pages of tacheometer field book, showing sights, readings,  
entries and computations required for geodetic levelling.





Department of Public Works.

PART I.

REPORT

OF THE

DEPUTY MINISTER OF PUBLIC WORKS  
FOR THE FISCAL YEAR 1897-98.

DEPARTMENT OF PUBLIC WORKS,

OTTAWA, Dec. 22, 1898.

The Honourable JOSEPH ISRAEL TARTE,  
Minister of Public Works.

SIR,—Herewith I have the honour to submit the report of the Department of Public Works for the year ended the 30th June, 1898.

EXPENDITURE.

The expenditure during the year was as follows :—

Harbours, rivers, bridges, &c. . . . .	\$1,087,358 85
Public buildings . . . . .	969,176 58
Telegraphs . . . . .	78,297 62
Miscellaneous, including salaries, &c . . . . .	108,983 82
	<hr/>
	\$2,243,816 87

Compared with previous years, the expenditure for the last year shows an increase.

Expenditure—1891-92 . . . . .	\$2,084,644 38
do 1892-93 . . . . .	2,274,448 47
do 1893-94 . . . . .	2,315,021 67
do 1894-95 . . . . .	2,033,219 53
do 1895-96 . . . . .	1,583,409 35
do 1896-97 . . . . .	1,744,654 21
do 1897-98 . . . . .	2,243,816 87



## REVENUE.

The revenue of the Department amounted to \$135,528.46, considerably larger than that for a number of years.

Revenue for 1891-92 .....	\$ 100,929 71
do 1892-93 .....	126,186 25
do 1893-94 .....	119,779 36
do 1894-95 .....	101,846 27
do 1895-96 .....	102,439 12
do 1896-97 .....	109,966 01
do 1897-98 .....	135,528 46

The sources from which the revenue was derived are as follows :—

Slides and booms, Ottawa district . . . . .	\$ 60,765 90	
do St. Maurice district . . . . .	29,893 41	
	<hr/>	\$ 90,659 31
Esquimalt Graving Dock . . . . .	\$ 6,227 92	
Lévis do . . . . .	19,839 97	
Kingston do . . . . .	7,448 31	
	<hr/>	33,516 20
Rivière du Lièvre Lock . . . . .	\$ 246 84	
River Yamaska Lock . . . . .	355 46	
	<hr/>	602 30
Telegraphs . . . . .		10,750 65
		<hr/>
		\$ 135,528 46

The revenue from slides and booms, graving docks and locks, exceeded that of the previous year by \$24,183.72. The collections from the Ottawa district slides were \$8,947.73 in advance of 1896-97, and for the St. Maurice district, \$7,820.91 in advance.

The revenue from the Esquimalt Graving Dock was \$6,227.92 being \$1,286.97 less than the year before: the tonnage of vessels docked was 28,453 tons, or 539 tons more than in the previous year, but the dock was occupied for only 91 days, or 12 days less than the year before.

The revenue from the Lévis Graving Dock amounted to \$19,839.97, being \$7,439.40 more than for 1896-97. The dock was occupied for 156 days, as against 77 in the previous year, and the tonnage of vessels docked was 18,913, or 2,059 tons more than in the year before. The Kingston Graving Dock returned \$7,448.31, being \$1,087.71 more than in the previous year; and 136 vessels, or 84 more were docked therein, having a tonnage of 17,623 tons, or 8,382.76 less than in 1896-97.

The returns from the locks at Rivière du Lièvre and River Yamaska were \$602.30, an increase of \$138.94 over the previous year.

The returns from telegraphs were \$10,750.65, an increase of \$1,378.73 over the previous year.

## PUBLIC BUILDINGS.

Before proceeding to review the operations of the Department in connection with the construction and maintenance of public buildings, I feel it a duty to make reference

## Department of Public Works

to the loss which has been sustained by the death of the late Mr. Thomas Fuller, Chief Architect of this Department, who entered our service on the 1st November, 1881, and was superannuated on the 1st October, 1896.

The late Mr. Fuller designed most of the important public buildings in the Dominion. In 1866 his plans were selected for the construction of the Parliament Building in this city, a structure which is greatly admired for the harmony of its lines and the beauty of its general appearance. Upon the completion of this building, Mr. Fuller was entrusted, after having submitted competitive plans, with the construction of the new Capitol at Albany, N.Y., and remained there until he accepted from the then Minister of Public Works, in 1881, the post of Chief Architect of Canada.

From 1881 to 1896, all the public buildings constructed by the government were designed by him, including among others the new Departmental Building on Wellington street, in Ottawa (generally called the Langevin Block); the drill sheds in Toronto and Halifax; the new post office building in Victoria, B.C.; the Hamilton post office building, etc., etc.

Mr. Fuller has left in the Department the record of a brilliant architect and of a conscientious chief, applying to his work all the faculties with which he was so highly endowed, while being firm in the defence of the interests with which he was entrusted.

He has been succeeded in his important position by his trusted and most valuable assistant, Mr. David Ewart, who has been an officer of the Department in the Chief Architect's branch for the past 28 years, having entered the service in May, 1871.

Owing to Mr. Fuller's retirement, the work executed during the fiscal year under review has been carried out under the supervision of Mr. Ewart. At the end of the last fiscal year, the Department had under construction the drill hall at Halifax, the post office at Windsor, N.S., the reconstruction of the roof of the West Block on the Departmental Buildings in Ottawa, destroyed by fire in 1897, and the post office at Victoria, B.C.

The drill hall at Halifax was nearly completed at the end of the fiscal year 1897-98, and is now partly occupied. The same may be said of the new post office at Victoria, B.C.

Towards the end of the fiscal year the reconstruction of the roof of the West Block in Ottawa was nearly completed, and the rooms contained in the attic covered by that roof are now in a condition to be occupied; a suite of them being, as a matter of fact, occupied by the Department of the North-west Mounted Police.

The reconstruction of the public building at Windsor, N.S., which was destroyed by fire in the month of October, 1897, was well advanced at the end of the fiscal year and is now completed.

New buildings have been commenced at Liverpool, N.S., and at Ingersoll and Rat Portage, Ontario. Public tenders have been called for their execution, contracts have been awarded and the works being in each case under way. Properties have been purchased at Berthierville and Montmagny, and the buildings situate thereon have been remodelled at a very moderate cost for the accommodation of the postal service. They were occupied for these purposes at the end of the fiscal year.

Sketches have been made by the present Chief Architect, Mr. Ewart, for a proposed Geological Museum building in Ottawa, the matter being one that has been brought to the attention of the Department at various times. The plans are fairly well advanced, and when it will be decided to go on with the building, they are in such a condition as to be completed within a very short time.



The various minor services connected with the maintenance of the public buildings throughout Canada, under the charge of this Department and under the immediate charge of the chief architect, have been well performed. This work in itself may not appear at first sight very important, but when the number and the value of the buildings is considered, it can be seen that it requires from the chief architect constant and close attention. There are upwards of 225 buildings to look after. The water, gas, light and drain services have to be inspected and kept in good condition. The buildings themselves, which are for the most part constructed of stone or stone and brick, require periodical repairs which, if delayed, always cause an additional expenditure of money following upon each year's delay in the work. About three years ago a general inspection of all the buildings was made and reports submitted concerning the requirements at each place. From year to year appropriations have been obtained and the buildings have been put in a fairly good state of repair.

One of the matters connected with the maintenance of the buildings which requires attention and will entail some additional expenditure is the substitution of electric light for the present mode of lighting in our various buildings. Some of the buildings are now lighted by electricity, others by gas, while a large number, especially in the provincial towns, are still lighted by that old, obsolete and unpleasant method, coal oil. In many of these towns electric light has been introduced and is used, whilst sometimes the most important buildings of the town, those owned by the government, still offer for the carrying on of the public business no other means of illumination but the crude method above referred to. When we come, however, to consider the total representing the cost of introducing the electric light in all the buildings, we pause, as we have not at our command the appropriation required.

I may be permitted, to suggest that the necessary appropriation be obtained and that electric light be introduced in all the public buildings where the townspeople use that mode of lighting.

As was outlined in last year's report the public buildings in Ottawa have been wired for electric lighting, and electric light is now used in the buildings instead of gas which was formerly used; as regards ventilation and protection from fire, this has been a great improvement.

For the supply of current a contract has been entered into with the Ottawa Electric Light Company at the unprecedented (I believe) low price of \$2.25 per light per year for the first 3,000 lights, and \$2.00 for any additional lights over that number, the total number of lights in the buildings being a trifle over 6,000.

Steps have also been taken to carry into absolute effect a scheme for the protection from fire of the Parliament and Departmental Buildings in Ottawa.

A new main has been brought up to the several buildings from the city's street main, and powerful Worthington pumps with Westinghouse electric motors have been installed in each of the east, west and central blocks of the Parliament and Departmental Buildings as well as in the Langevin Block. Upon trial, at various times, the pumps worked in a very satisfactory manner, and they now, it is thought, afford a complete protection against any such destructive fire as destroyed in 1897 the attic story of the western block.

# Department of Public Works.

## HARBOURS AND RIVERS.

The most important of the works connected with the improvement of harbours and rivers, which the department has under its control, is without doubt the maintenance of the channel between Montreal and Quebec, and as can be seen at page 134 of the report of the Chief Engineer important work has been performed in connection therewith during the fiscal year under review.

As you are aware, the operations conducted, first by the Harbour Commissioners since 1883, and by the department since 1889, have had in view the giving of a depth of  $27\frac{1}{2}$  feet at low water throughout the channel, the depth at some points of the river being far in excess of that minimum where consequently no dredging was required.

Ever since the year 1830, when the Harbour Commissioners were constituted for the management of the harbour of Montreal, the deepening of the channel has had to keep pace with the increase in the size of ships consequent upon the enlargement of trade and commerce between the European countries and Canada.

As can be seen by the following brief notes, the growth of the harbour and the improvement of the channel have gradually followed the demands of trade. In the harbour, up to 1825, there were only two small wharfs between what is now the Custom-house Square and the foot of Lachine Canal, with about 1,120 feet frontage and about 2 feet depth of water at the lowest stage. In 1825, the wharfing was extended and placed in about 5 feet of water. Between 1830 and 1832, several of the present wharfs were built of piles with from 5 to 20 feet of water in front of them, the aggregate frontage reaching 4,950 feet. From 1840 to 1846, that frontage was extended to 7,070 feet. With the exception of two new wharfs built in 10 feet of water, in the lower part of the harbour, nothing further was done till 1856.

Dredging operations had, however, been already commenced to deepen the river below the city and were by that time sufficiently advanced to allow of vessels reaching Montreal with a draught of 13 feet at ordinary low water, instead of 11 feet as before, and it was then determined to continue the deepening of the ship channel which, in 1844, it had been decided to carry down to a depth of 16 feet.

From a depth of 16 feet, the enlargement was carried to 20 feet in 1867, then to 22 feet at the close of 1878, to 25 feet in October, 1882, and ultimately to  $27\frac{1}{2}$  feet, and it is evident that this latter depth will not long be sufficient for the enormous ships which are now being built for the carrying trade, and which will require greater depth accommodation.

The deepening of the channel to  $27\frac{1}{2}$  feet has been proceeded with since 1883, and that depth can now be found, under normal conditions, when the water is at its ordinary stage.

In 1895, however, during the lowest stages of the water, in the months of October and November, it was found that the water had become so low that during a few weeks of those months, the normal depth of  $27\frac{1}{2}$  feet was not found at a few points the water showing during the two last weeks of October and November an average depth of 26 feet 6 inches. There was also a reduction in the depth of water in 1897, but this time for a shorter period, *i.e.*, only one week in October, when the depth was less than 27 feet. I append



hereto tables showing the average weekly depth of water observed in the ship channel during 1895-96-97-98 :—

AVERAGE weekly depth of water observed in the Ship Channel of the River St. Lawrence from May to November, in the Years 1895, 1896, 1897 and 1898.

1895.			1896.			1897.			1898.		
Week Beginning		Ft. in.	Week Beginning		Ft. in.	Week Beginning		Ft. in.	Week Beginning		Ft. in.
May 4.....		34 0	May 2.....		40 0	May 1 . . .		34 6	May 7.....		32 0
" 11.....		34 0	" 9 . . . .		35 6	" 8 . . . .		36 9	" 14.....		31 6
" 18. ....		34 1	" 16 . . . .		34 3	" 15.....		35 6	" 21.....		31 2
" 25.....		32 7	" 23 . . . .		32 10	" 22.....		34 7	" 28.....		30 7
			" 30.....		31 8	" 29.....		34 9			
June 1.....		32 2	June 6.....		31 3	June 5.....		34 3	June 4.....		31 9
" 8.....		32 3	" 13 . . . .		31 0	" 12.....		33 0	" 11.....		31 7
" 15.....		31 4	" 20.....		31 2	" 19 . . . .		32 8	" 18.....		30 8
" 22.....		30 10	" 27.....		29 10	" 26 . . . .		31 3	" 25.....		30 5
" 29.....		31 0									
July 6.....		30 2	July 4.....		29 2	July 3 . . .		30 9	July 2.....		30 9
" 13. ....		29 0	" 11.....		29 0	" 10 . . . .		30 3	" 9.....		31 0
" 20. ....		28 3	" 18.....		29 1	" 17.....		30 8	" 16.....		30 0
" 27. ....		28 3	" 25.....		28 9	" 24 . . . .		30 3	" 23.....		29 2
						" 31 . . . .		29 8	" 30.....		29 0
Aug. 3.....		28 0	Aug. 1.....		28 5	Aug. 7.....		29 9	Aug. 6.....		29 0
" 20. ....		27 10	" 8.....		28 0	" 14.....		29 2	" 13.....		28 7
" 17. ....		28 2	" 15.....		28 5	" 21.....		29 3	" 20.....		28 3
" 24.....		28 6	" 22 . . . .		28 0	" 28.....		28 10	" 27....		28 6
" 31. ....		28 9	" 29 . . . .		27 8						
Sept. 7.....		27 10	Sept. 5.....		27 4	Sept. 4.....		29 1	Sept. 3.....		28 7
" 14.....		27 8	" 12.....		27 8	" 11.....		28 3	" 10.....		28 4
" 21. ....		27 4	" 19.....		27 6	" 18.....		28 3	" 17.....		27 10
			" 26 . . . .		27 3	" 25.....		27 6	" 24.....		28 0
Oct. 5.....		27 2	Oct. 3.....		27 5	Oct. 2.....		27 7	Oct. 1.....		28 4
" 12.....		27 0	" 10.....		28 3	" 9.....		27 3	" 8.....		28 0
" 19.....		26 9	" 17.....		28 0	" 16.....		27 1	" 15.....		27 5
" 26.....		26 10	" 24.....		27 4	" 23.....		26 9	" 22 . . . .		28 8
			" 31.....		27 5	" 30.....		27 0	" 29.....		29 0
Nov. 2.....		26 2	Nov. 7 . . . .		28 3	Nov. 6.....		27 6	Nov. 5.....		29 5
" 9.....		26 3	" 14.....		29 7	" 13.....		27 8	" 12.....		28 10
" 16.....		26 10	" 21.....		29 2	" 20.....		27 3	" 19.....		28 6
" 23.....		27 0	" 28.....		29 6	" 27.....		27 3	" 26.....		28 8
" 30. ....		26 10									

It will be seen by these tables that during nearly the whole season of navigation, that is to say, up to the beginning of October, the depth of water is always in excess of the standard depth of 27½ feet, and that during the years 1896 and 1898, at no period of the season was the water level below the standard depth.

At the opening of navigation, and well into August, the water averages 30 feet ; and in 1896 and 1898, at the periods when, in 1895, there was only 26 feet 2 inches and 26 feet 3 inches in the channel, there was a depth in 1896, of 28 feet 3 inches, and in 1898, of 29 feet 5 inches.

These tables show conclusively that the year 1895 was an exceptional year, and that the normal condition of affairs has been re-established during the succeeding seasons.

It must also be borne in mind that the help of the tide is given to navigation nearly as far up as Three Rivers, and when the depth of water is reported from Sorel or

## Department of Public Works

Montreal, or shown by the semaphores, advantage can be taken of the tide in exceptional years, such as 1895, in order to pass over the parts of the channel affected by it.

In the present state of the channel, as shown by the depths recorded, with proper care and the proper handling of vessels by the persons in charge, one may say that the navigation at  $27\frac{1}{2}$  feet is safe for any vessels not loading beyond that draught.

The extraordinary low water of 1895 will not, we hope, occur again but as it was due to circumstances outside of the control of the department, and as there might possibly be a recurrence of the same stage of water, the department has taken steps to refer the depth of the channel to that extraordinary low water instead of, as originally, to the ordinary low level of the fall season, and for that purpose, since 1895, dredges of the department have been at work widening the sharp curves of the channel, deepening at points where the depth was not at the standard required and doing all possible to give the necessary security to the large ocean steamers navigating the St. Lawrence.

During the season of 1898, upon your orders, the channel was tested and swept, from the month of June to the month of September, in a regular manner with a plant under the immediate charge of Mr. F. W. Cowie, an engineer of this department; a lookout being kept at the same time for any displacement of the buoys marking the channel, and whenever obstructions were met, a dredge was immediately upon the obstruction being found put at work to remove the same.

The dredges under the control of the department, and operating in the ship channel during the year under review were the "Laurier," the "Laval," and dredges No. 8, 11 and 12. The "Laurier" worked at Ste. Croix and Contrecoeur; the "Laval" worked on the Barre-à-Boulard; the "No. 12" at Ile Ste. Ours, Pointe à Citrouille, Champlain, Longue Pointe and Pointe aux Trembles; the "No. 11" at Pointe aux Trembles, Longue Pointe and Contrecoeur; and the "No. 8" worked in the Harbour of Montreal, until sent to Kingston.

The total number of cubic yards of material removed was 625,488 yards, the work in question being done in 7,770 hours, or at the rate of about 81 yards per hour, and an average for the whole of the dredges of about 810 yards per day.

The average, of course, fails to give an accurate idea of the work of each dredge as the work was done in different materials, the bottom being composed of either sand or stone, stone and boulders, stone and gravel, or clay and gravel. For instance, "No. 11" worked at Longue Pointe and Contrecoeur, performing dredging at a cost not exceeding  $5\frac{2}{3}$  cents per yard, while the dredge at Barre-à-Boulard, where the material consisted of stone, hard-pan and boulders, operated at a cost of  $61\frac{2}{3}$  cents per yard.

The works of sweeping and testing the channel and the work of dredging were performed in a thorough and satisfactory manner but it was found that the plant at the disposal of the department was not sufficient to admit of the work being done with the celerity required by the trade. This moved you to order, after the necessary funds had been voted by Parliament, the construction of two additional steel dredges, which are in course of construction at the Government ship yards at Sorel. The ship yard is under the direction of Mr. James Howden, who also has charge of the dredging operations on the river, and is the general superintendent as well of the dredging being carried on in the provinces of Ontario and Quebec. The ship yard is located on the McCarthy estate, the property having been under rental to the department since 1889



when the channel works were transferred from the Montreal Harbour Commissioners to the Government of Canada and placed under the control of this department.

The additional work required to be performed in the channel to meet the requirements of the trade and the consequent increase necessary in the fleet at the disposal of the department have necessitated the enlargement of the works at Sorel. An option for purchase has been obtained from the McCarthy estate for a sum to be fixed by arbitration, and additional buildings have been erected to replace the old structures in which the work could only be carried on under great difficulties.

In this connection it must be borne in mind that the dredging fleet, when transferred to this department in 1889, was composed of old vessels, the machinery of which was in a fairly good state but the hulls of which, being all of wood, were in an advanced stage of dilapidation and could only be kept up by constant and costly repairs. The average healthy life of a dredge with a wooden hull is about 15 years. After that, the hull deteriorates very rapidly and soon becomes useless. In that way several of the old dredges handed over to us by the Montreal Harbour Commission have had to be dismantled and new hulls constructed to receive the machinery.

Since 1889 the department has built for the ship channel two new and powerful dredges, the "Laval" and the "Laurier," and two new steel ones are now on the stocks being rapidly constructed. Three new tugs have been built and are in commission, namely:—the "Cartier," the "St. Jean d'Iberville" and the "Emilia." The remaining boats, such as the "John Pratt," the "St. James," the "Brydges," the "Ottawa" and the "St. Francis" are old and keep together only by a miracle. At very short notice they must all be refitted and provided with new hulls.

When the two new dredges shall be completed the fleet operating on the St. Lawrence will consist of six powerful dredges, and the operations will be conducted in a quicker and more satisfactory manner.

I do not think that I need make any lengthy reference to the necessity and urgency of carrying on the work on the St. Lawrence with as great rapidity as possible. The whole of Canada is interested in the performance of this work. Everybody recognizes that it must be thoroughly and quickly done, and I have no doubt that any efforts from the department, tending to procure better and more secure accommodation for the oceanic trade, will be met with hearty support by all who have at heart the advancement of the country. Already the grain carrying trade has looked to the Canadian route as an outlet for the transportation of the products of the great West. Elevators are being constructed at various points on the route, and with the improvement of facilities in the Harbour of Montreal, the Canadian route should become the favourite, and should receive all the encouragement which it deserves.

The improvements in the Harbour of Montreal have also engaged the attention of the department during the past fiscal year, and active negotiations have been carried on between the various incorporated bodies of Montreal and the Government with a view to increase the wharf accommodation and to procure better facilities for handling the traffic which is about to come there.

Plans have been suggested and discussed, and it is to be hoped that we will shortly see a commencement of the works which are so urgently required.

## Department of Public Works.

While the dredging operations have been going on in the channel between Montreal and Quebec, the interests of the other ports in Canada have not been neglected. A fleet of dredges has been employed from the Pacific to the Atlantic ports, improving the entrance of harbours, the navigation of rivers and giving, with the limited means at our disposal, all the relief that appeared to be required throughout the country.

In British Columbia, the dredge "Mud Lark" has been operating in the Harbour of Nanaimo, the snag boat "Samson" has been at work on the Fraser River, while the dredge "Muskrat" has been operating on the waters of the Columbia River.

In Manitoba, the dredge "Winnipeg" has been working in the Red River.

In Ontario, the dredges "Challenge," "Ontario," "Nipissing," "Queen" and "No. 9" have been constantly working during the whole season at different harbours.

In the province of Quebec, the dredges "St. Louis," "Nithsdale" and "No. 1" have been working at points where improvements were most needed.

The "No. 9," which formerly belonged to the ship channel, after having done work for four seasons in the Kaministiquia River, had to be dismantled, the hull being absolutely gone.

The "No. 8" did magnificent work in the Harbour of Kingston.

The fleet of the department, however, is old. That working in Ontario and Quebec is all composed of spoon dredges, the work of which is not what it should be, and it has become necessary that new dredges be built in order that the required work be performed satisfactorily. Their number is also insufficient, and each year other dredges have to be hired in order to do the work which our fleet is unable to perform. Dredging at Coteau Landing, for instance, which was a very important piece of work, had to be performed by hired dredges.

In the Maritime provinces, the department has five dredges, the "St. Lawrence," the "Canada," the "Prince Edward," the "New Dominion" and the "Cape Breton." Since her construction, the "Cape Breton" has steadily worked in the Harbour of St. John, N.B., in connection with the improvements being carried on there by the City of St. John. The "Prince Edward" operates exclusively on the shores of Prince Edward Island, while the "St. Lawrence" and "Canada" alternately work in Nova Scotia and New Brunswick.

The "New Dominion," a much smaller dredge, operated in the River St. John. In these provinces also, the need of additional dredging machines is very much felt, and the fleet should be increased by at least one, if not two additional dredges.

The operations carried on in connection with the construction of piers and wharfs throughout the Dominion are detailed at length in part four of this report, which is the report of the Chief Engineer. Information is given in reference to all the works done during the year, the history of said works being given from their incipency, and the cost, up to date, of those works being also given.

Although only interim reports have been received from the Chief Engineer, who departed in March last (1898), in order to study the best means of improving the water courses of the Yukon District, I have thought it advisable to make reference to the same in this report, in view of the large influx of people to that country; the new discoveries which are daily made attracting thereto a large concourse of people whose only



means of access, at the present time, is by navigation through the lakes and rivers which extend from the foot of the White Pass to Dawson City. From the meagre information at our disposal at the time of despatching the Chief Engineer for his examination, it was known that the stretch from the head of Lake Bennett to the White Horse rapids could be made easier for navigation if certain obstructions were removed and the water raised at some points by the construction of dams or other works. Beyond the White Horse rapids to Dawson it was also represented that some improvements were absolutely needed and would be of great help to navigation. As soon as the Chief Engineer shall have returned it is intended to take immediate steps for those improvements.

As appendices to the report of the Chief Engineer, will be found two very important monographs by Mr. Steckel, of the Chief Engineer's office, one, on the Denison Hydrograph, and the other, on the self-reducing Sanguet Tacheometer, as adapted to precision levelling.

#### TELEGRAPHS.

Attention may be here drawn to the work commenced by the department for the extension of the telegraph system on the north shore of the St. Lawrence from Pointe aux Esquimaux eastward. Already, at the end of this fiscal year, nearly 100 miles of the extension of the said telegraph line has been built and during the next fiscal year it is proposed to push the work with great activity.

As was outlined in my last annual report, it is the intention of the department to give to the shipping navigating the St. Lawrence uninterrupted telegraphic communication from the straits of Belle Isle with the whole of Canada. The difficulties in the way of constructing this telegraph line, are very great. The country is for the most part barren and difficult of access. For a large portion, extending far into the interior, the country is nothing but a bare rock with no vegetation and no trees of any size whence the supplies of poles could be had. It can be seen at a glance that the construction of a telegraph line must be attended with great difficulties and will cost per mile a much greater amount than any of the lines which have been constructed yet in Canada. The department, however, has taken the means of obtaining the best information by having the ground examined, and it will in the performance of the work have at its disposal all the information that it has been able to procure.

While examining the water route into the Yukon District, during the course of the last fiscal year, the Chief Engineer of the department, Mr. Coste, was also instructed to inquire into the possibility and best means of connecting the Yukon country with eastern Canada by means of a telegraph line. At the conclusion of the fiscal year his report was not yet in possession of the department but it appears at present that the first work to be performed, if the Government undertake to build the line, should be the connecting of Dawson City with the nearest coast harbour, that of Skagway. A telegraph line built along the water stretches from Dawson to Lake Bennett would not only give the further telegraphic communication required but would, by the establishment of stations along the route, render the communication and traffic much more easy in that section, where such a large number of people have been travelling in order to reach the famed northern gold fields. It is expected that such a line would yield a

## Department of Public Works

revenue which would pay a handsome surplus over the maintenance and operating expenses.

There are now  $2,958\frac{3}{4}$  miles of telegraph lines under the control of this department, divided into  $2,751\frac{1}{2}$  miles of land lines and  $207\frac{1}{4}$  miles of cables, as follows :—

	Land Lines.	Cables.
	Miles.	Miles.
Newfoundland.....	14	
Nova Scotia.....	$229\frac{1}{4}$	$22\frac{3}{4}$
New Brunswick.....	76	$19\frac{1}{4}$
Quebec.....	$1,142\frac{3}{4}$	$164\frac{3}{4}$
Ontario.....	$24\frac{1}{2}$	$9\frac{1}{2}$
British Columbia.....	698	
North-west Territories.....	567	
Total.....	$2,751\frac{1}{2}$	$207\frac{1}{4}$

The Ontario lines make connection between Leamington, Point Pelee and points on Pelee Island. The Quebec system is divided into five sections, that from Baie St. Paul to Chicoutimi ; the river and gulf line from Murray Bay to Pointe aux Esquimaux ; the quarantine line from Quebec to Grosse Ile, and the Anticosti and Magdalen Islands line. The North-west Territories lines extend from Edmonton to St. Albert, a distance of  $607\frac{1}{2}$  miles, and from Moosejaw to Wood Mountain a length of  $90\frac{1}{2}$  miles. In British Columbia there are the Ashcroft-Barkerville line, the line from Victoria to Cape Beale, the Nanaimo to Comox, and the Alberni to Nanaimo. The New Brunswick lines give communication between Chatham and Escuminac and between Eastport and Campobello, Grand Manan, Cheney's and Whitehead Islands.

The Nova Scotia lines run from North Sydney to Meat Cove where connection is made with the Magdalen Islands and St. Paul's Island by cables. There is also communication, under government control, between Mabou and Cheticamp and between Barrington and Cape Sable. These lines and cables were, with few exceptions, kept in good working order throughout the year.

The repoling of the line between Margaree and Cheticamp was completed last November and practically makes a new line of that section. The remaining portion between Margaree and Mabou, about 38 miles, will be repoled in the spring

It is proposed also to repole the 50 miles between Ingonish and Meat Cove. The loop line to White Point has been withdrawn, having proved of no use.

### GENERALLY.

The total volume of correspondence passing through the department last year was in excess of previous years. The number of letters received would amount to about 32,500 ; there were 18,791 sent and about 11,300 cheques mailed.

### ACTS OF PARLIAMENT.

At page 3 of part 7 will be found a list of such Acts\*as were passed by Parliament last session having reference to the Department of Public Works.



## ART GALLERY.

But one addition was made to the art gallery during the year, an oil painting by Charles Eugene Moss, R.C.A. This painting was presented to the gallery by the Royal Canadian Academy, in accordance with the Act of Incorporation requiring diploma pictures to be deposited in the National Gallery.

The number of visitors to the National Gallery who have registered their names during the year was 13,236, a decrease of 6,064 since 1897.

The following table shows the number of visitors each year since the gallery was inaugurated, according to the returns in the visitors' book :—

1882-83.....	8,261
1883-84.....	9,928
1884-85.....	11,893
1885-86.....	8,792
1886-87.....	11,943
1887-88.....	16,593
1888-89.....	14,241
1889-90.....	18,048
1890-91.....	21,289
1891-92.....	20,026
1892-93.....	16,717
1893-94.....	13,366
1894-95.....	19,146
1895-96.....	22,961
1896-97.....	19,300
1897-98.....	13,236

The report of the Curator will be found at part 7, page 33.

## COLLECTOR OF REVENUE.

The report of the collector of revenue, which forms part 6 shows that the gross collections, not including telegraph revenue, amounted to \$124,777.81, an increase of \$24,183.72 over the previous year.

## CONTRACTS.

A recapitulation of all contracts entered into by the department during the year, will be found at page 7, of part 7. At page 12 of part 7, will be found particulars of all the property purchased or sold during the year, and all leases entered into by the department.

## CORRESPONDENCE.

The usual comparative tables of the volume of correspondence, in the several branches, will be found at page 49 of part 7. They show a steady increase in the volume of work.

# Department of Public Works.

## EXPENDITURE.

The annual statement and classification of expenditure as prepared by the accountant, will be found in part 2.

## GRAVING DOCKS.

The Dominion Government owns and maintains three graving docks, viz. :— the Lorne, at Lévis in the province of Quebec ; the Kingston, at Kingston in the province of Ontario, and the Esquimalt, at Esquimalt, near the City of Victoria, in British Columbia.

The Atlantic Dock at Halifax is owned and controlled by the Halifax Graving Dock Company (Limited), its construction being secured by subsidies from the Imperial and Canadian Governments and from the City of Halifax.

The dimensions of the docks are as follows :—

The Lorne.—Commenced by the Harbour Commission of Quebec in 1873, was assumed and completed by the department in 1889.

Length . . . . .	445 feet.
Width at coping level . . . . .	100 “
“ bottom . . . . .	73 “
“ entrance . . . . .	62 “
Depth of water on sill at high water, ordinary spring tides.	26½ “
“ “ neap tides..	20½ “

The Kingston was built by this department, having been completed in 1892.

Length on the floor . . . . .	280 feet.
Width “ . . . . .	47 “
“ at coping level . . . . .	79 “
Depth . . . . .	20½ “
“ of water on sill at low water . . . . .	16 “
Width of entrance . . . . .	55 “

(The level of Lake Ontario has a range of 3½ feet.)

The length can be increased 23 feet by placing the caisson on the apron line.

The Esquimalt.—Completed by this department in 1887.

Length over keel blocks . . . . .	430 feet.
Total length of dock . . . . .	480·10 “
Width at bottom . . . . .	41 “
“ coping level . . . . .	90 “
“ entrance . . . . .	65 “
Depth of water on sill at high water, ordinary springs.	26½ “

(Spring tides rise 7 to 10 feet, neaps 3 to 8.)



The Halifax was built under agreement with and subject to the approval of this department ; completed 1889.

Length .....	595 feet.
Width at coping level .....	102 "
"    bottom .....	72 "
"    entrance .....	89 $\frac{1}{4}$ "
Depth of water on sill at ordinary spring tides .....	30 "

A fuller description of these graving docks will be found at page 174, part 4, and the receipts from each at page 14, of part 6.

Officials.—A complete list of all the officials employed in the operation and management of the graving docks, together with their ages, dates of appointment, salaries, &c., will be found at page 23, of part 7.

#### SLIDES AND BOOMS.

The reports on works of improvement and repair on the different slides and booms will be found at page 179, part 4.

#### BRIDGES.

Reports on the bridges under the control of the department will be found at page 189, part 4.

#### NAVIGATION, OPENING AND CLOSING OF.

The usual tables furnishing this valuable information will be found in part 7, page 35.

#### OFFICIALS.

The list of officials, showing the names and terms of service of those who have filled the principal positions in the department from the time of its inauguration in 1841 to date, will be found at part 7, page 17.

I have the honour to be, sir, your obedient servant,

A. GOBEIL,  
*Deputy Minister of Public Works.*

Ottawa, 22nd December, 1898.

Department of Public Works

PART II

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STATEMENTS OF EXPENDITURE

DURING

FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1898





Department of Public Works.

PART II.

STATEMENT A.—Showing the Amcunts Expended by the Department of Public Works of Canada during the Fiscal Year ended 30th June, 1898.

Name of Work.	Con- struction and Im- provements.	Repairs and Furniture.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.				
Annapolis post office, &c.		160 17		160 17
Antigonish "		111 49		111 49
Arichat "		166 21		166 21
Baddeck "		255 93		255 93
Dartmouth "		177 08		177 08
Halifax Assistant Receiver General's Office.		132 05		132 05
" Dominion building.	972 33	720 49		1,692 82
" drill hall.	77,610 39			77,610 39
" examining warehouse.		436 51		436 51
" immigrant building.		444 80		444 80
" Lawlor's Island quarantine station.		340 51		340 51
Liverpool post office, &c.	1,668 44			1,668 44
Lunenburg "		48 82		48 82
Nappan experimental farm.	154 14			154 14
New Glasgow post office, &c.		230 34		230 34
North Sydney "		122 80		122 80
Pictou custom-house.		20 44		20 44
" post office.		172 38		172 38
Sydney post office, &c.		199 93		199 93
Truro "		77 36		77 36
Windsor post office (old)		45 00		45 00
" " (temporary).		76 45		76 45
" " (new)	5,940 91			5,940 91
" drill hall (new).	1,164 64			1,164 64
Yarmouth post office, &c.		69 42		69 42
Heating, lighting, water, &c., for all buildings in Nova Scotia (for details see page 17).			21,187 62	21,187 62
Totals, Nova Scotia.	87,510 85	4,008 18	21,187 62	112,706 65
Prince Edward Island.				
Charlottetown Dominion building		1,159 81		1,159 81
" marine hospital.		3 75		3 75
Montague post office.		56 00		56 00
Summerside post office, &c.	612 17	63 54		675 71
Heating, lighting, water, &c., for all buildings in Prince Edward Island (for details see page 17).			4,649 17	4,649 17
Totals, Prince Edward Island.	612 17	1,283 10	4,649 17	6,544 44
New Brunswick.				
Bathurst post office, &c.		134 73		134 73
Carleton (St. John) post office.		58 77		58 77
Chatham post office, &c.		93 54		93 54
Dalhousie "		95 76		95 76
Fredericton "		181 17		181 17
Marysville "	37 46			37 46
Moncton "		177 97		177 97
Newcastle "		132 91		132 91
Carried forward.	37 46	874 85		912 31



PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Con- struction and Im- provements.	Repairs and Furniture.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS— <i>Continued.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	37 46	874 85	.....	912 31
<i>New Brunswick—Concluded.</i>				
Partridge Island quarantine station.....	4,150 30	.....	.....	4,150 30
Portland (St. John) post office.....	.....	17 39	.....	17 39
St. John custom-house.....	.....	541 24	.....	541 24
" post office.....	.....	1,025 58	.....	1,025 58
" savings bank.....	.....	150 44	.....	150 44
St. Stephen's post office, &c.....	.....	246 05	.....	246 05
Sussex ".....	.....	49 35	.....	49 35
Tracadie lazaretto.....	491 08	28 28	.....	519 36
Woodstock post office, &c.....	.....	556 11	.....	556 11
Heating, lighting, water, &c., &c., for all buildings in New Brunswick (for details see page 17). ....	.....	.....	19,138 47	19,138 47
Totals, New Brunswick.....	4,678 84	3,489 29	19,138 47	27,306 60
<i>Quebec.</i>				
Aylmer post office.....	.....	18 48	.....	18 48
Berthierville post office, &c.....	4,656 75	.....	.....	4,656 75
Coaticook ".....	.....	10 08	.....	10 08
Dundee custom-house.....	.....	4 00	.....	4 00
Grosse Isle quarantine station.....	828 72	1,681 25	.....	2,509 97
Hull post office.....	.....	109 00	.....	109 00
Joliette post office.....	.....	566 07	.....	566 07
Laprairie ".....	.....	135 00	.....	135 00
Montmagny post office, &c.....	7,494 75	.....	.....	7,494 75
Montreal custom-house.....	.....	187 82	.....	187 82
" drill hall.....	9,694 68	.....	.....	9,694 68
" examining warehouse.....	.....	2,061 24	.....	2,061 24
" inland revenue office.....	2,059 00	125 95	.....	2,184 95
" post office.....	5,126 54	2,710 23	.....	7,836 77
" " running elevator.....	.....	.....	2,160 07	2,160 07
" public buildings generally.....	.....	.....	124 05	124 05
Quebec citadel buildings.....	.....	494 37	.....	494 37
" clerk of works office.....	.....	65 00	.....	65 00
" custom-house.....	.....	3,033 95	.....	3,033 95
" drill hall.....	.....	6,903 09	.....	6,903 09
" examining warehouse.....	.....	634 03	.....	634 03
" immigration office.....	.....	360 03	.....	360 03
" immigrant building on Princess Louise em- bankment.....	.....	1,864 29	.....	1,864 29
" post office.....	.....	4,689 50	.....	4,689 50
" Queen's wharf building.....	.....	2,509 45	.....	2,509 45
" weights and measures office.....	.....	14 50	.....	14 50
Richmond post office, &c.....	5,854 18	.....	.....	5,854 18
Rimouski ".....	6,497 82	.....	.....	6,497 82
Rivière du Loup ".....	.....	89 06	.....	89 06
Sherbrooke ".....	.....	321 66	.....	321 66
Sorel ".....	907 45	172 14	.....	1,079 59
St. Henri ".....	.....	6 56	.....	6 56
St. Hyacinthe ".....	.....	17 48	.....	17 48
St. Jérôme ".....	.....	20 50	.....	20 50
St. Johns ".....	.....	478 34	.....	478 34
St. Roch (Quebec) post office.....	.....	20 04	.....	20 04
Ste. Therèse excise office.....	.....	25 90	.....	25 90
Three Rivers custom-house.....	.....	1,062 24	.....	1,062 24
" post office.....	.....	708 39	.....	708 39
Valleyfield ".....	.....	2 00	.....	2 00
West Farnham ".....	.....	14 55	.....	14 55
Heating, lighting, water, &c., &c., for all buildings in Quebec (for details see page 18). ....	.....	.....	44,089 46	44,089 46
Totals, Quebec.....	43,119 89	31,116 19	46,373 58	120,609 66

# Department of Public Works.

## PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Con- struction and Im- provements.	Repairs and Furniture.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Ontario.</i>				
Alexandria reformatory .....	13 35			13 35
Almonte post office, &c .....		3 00		3 00
Amherstburg post office .....		327 28		327 28
Arnprior " .....	9,976 83			9,976 83
Barrie " .....		110 84		110 84
Belleville " .....		265 61		265 61
Berlin " .....		22 20		22 20
Brampton " .....		4 20		4 20
Brantford " .....		984 95		984 95
Brockville " .....		425 79		425 79
Carleton Place " .....		25 18		25 18
Cayuga " .....		9 25		9 25
Chatham " .....		300 56		300 56
Cobourg " .....	157 00			157 00
Cornwall " .....		128 75		128 75
Dundas " &c .....		32 25		32 25
Galt " .....		66 99		66 99
Gananoque custom-house. ....		172 67		172 67
" post office .....		8 60		8 60
Goderich " &c .....		30 50		30 50
Guelph " .....		160 02		160 02
Hamilton " .....		1,434 49		1,434 49
Ingersoll " .....	3,990 99			3,990 99
Kingston custom-house .....	1,195 42	508 02		1,703 44
" examining warehouse .....		25 50		25 50
" inland revenue office. ....		4 25		4 25
" post office. ....		270 33		270 33
Lindsay " &c .....		30 76		30 76
London custom house .....	1,486 01	647 28		2,133 29
" post office. ....		679 94		679 94
Napanee " .....		54 75		54 75
Niagara Falls post office, &c. ....		36 11		36 11
Orangeville " .....		58 10		58 10
Orillia " .....		127 65		127 65
Ottawa Parliamentary and Departmental buildings:—				
Installation of electric light and pumps .....	74,942 21			74,942 21
Reconstruction Western Block after fire .....	90,139 82			90,139 82
Block-paving driveway to boiler house, Parlia- ment building. ....	2,033 50			2,033 50
Langevin Block, damages G. H. Perley property .....	600 00			600 00
Repairs and furniture .....		101,235 45		101,235 45
Telephonic service .....			3,999 63	3,999 63
Ottawa Parliament grounds:—				
Asphalt walks and roadways .....	14,964 00			14,964 00
New greenhouse .....	265 34			265 34
Maintenance of grounds .....			5,000 00	5,000 00
Removal of snow .....			374 08	374 08
Major's Hill park fence wall. ....	4,495 82			4,495 82
" maintenance. ....			2,837 34	2,837 34
Ottawa experimental farm .....	2,705 50	1,931 09		4,636 59
" geological museum. ....		122 00		122 00
" post office, asphaltting esplanade and lane ..	4,062 95			4,062 95
" post office repairs .....		17 90		17 90
" printing bureau .....		577 42		577 42
" Rideau hall, repairs and furniture. ....		15,276 68		15,276 68
" " grounds, \$2,460; snow, \$343.08; watchman, \$502.50; fuel and light, \$8,000 .....			11,305 58	11,305 58
Pembroke post office, &c. ....		16 80		16 80
Peterboro' " .....		20 35		20 35
Petrolea " &c. ....		4 45		4 45
Port Arthur " .....	74 46	138 05		212 51
Port Colborne " .....	1,100 00	1 50		1,101 50
Carried forward. ....	212,203 20	126,297 41	23,516 63	362,017 34



PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Con- struction and Im- provements.	Repairs and Furniture.	Staff and Main- tenance.	Total.
<b>PUBLIC BUILDINGS—<i>Continued.</i></b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>
Brought forward.....	212,203 20	126,297 51	23,516 63	362,017 34
<i>Ontario—Concluded.</i>				
Port Hope, post office.....		35 63		35 63
Prescott custom-house.....		3 00		3 00
" post office.....		40 22		40 22
Rat Portage post office, &c. ....	305 25			305 25
Smith's Falls ".....	500 28	10 90		511 18
Stratford ".....		41 00		41 00
Strathroy ".....		9 25		9 25
St. Catharines ".....	315 58	92 98		408 56
St. Thomas ".....		532 20		532 20
Toronto—Assistant receiver general's and inland revenue offices.....	793 44	1,383 16		2,176 60
Toronto custom-house.....		517 29		517 29
" drill hall.....	200 00			200 00
" examining warehouse.....		2,059 29		2,059 29
" post office.....		2,134 63		2,134 63
Trenton ".....		27 30		27 30
Walkerton ".....		225 28		225 28
Windsor ".....		120 90		120 90
Heating, lighting, water, &c., &c., for all buildings in Ontario (for details see page 18).....			172,709 28	172,709 28
Totals, Ontario.....	214,317 75	133,530 54	196,225 91	544,074 20
<i>Manitoba.</i>				
Brandon experimental farm.....	784 38	221 66		1,006 04
" immigrant building.....		101 66		101 66
" post office, &c.....		179 49		179 49
Dauphin Dominion land office.....		120 76		120 76
" immigrant building.....	2,348 80			2,348 80
Minnedosa ".....		56 41		56 41
Portage la Prairie post office, &c.....	20,312 98			20,312 98
Winnipeg, clerk of works office.....		202 60	3,008 88	3,211 48
" crown timber office.....		82 52		82 52
" custom-house.....		33 93		33 93
" Dominion lands office.....		90 45		90 45
" drill hall.....	866 66			866 66
" examining warehouse.....		426 47		426 47
" immigrant building.....		386 98		386 98
" Indian office.....		78 50		78 50
" post office.....		663 54		663 54
Heating, lighting, water, &c., &c., for all buildings in Manitoba (for details see page 20).....			12,561 08	12,561 08
Totals, Manitoba.....	24,312 82	2,644 97	15,569 96	42,527 75
<i>North-west Territories.</i>				
Calgary court-house.....	690 00	163 00		853 00
" post office, &c.....	550 00	82 25		632 25
" Dominion lands office.....		3 25		3 25
" immigrant building.....		25 00		25 00
Edmonton Dominion lands and registry office.....		177 80		177 80
" (south) immigrant building.....		43 00		43 00
Indian Head experimental farm.....		9 37		9 37
Lethbridge court-house.....		13 10		13 10
" post office.....	458 40	164 15		622 55
Macleod court-house.....		502 70		502 70
Carried forward.....	1,698 40	1,183 62		2,882 02

# Department of Public Works.

## PART<sup>II</sup>.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Con- struction and Im- provements.	Repairs and Furniture.	Staff and Main- tenance.	Total.
<b>PUBLIC BUILDINGS—<i>Continued.</i></b>	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	1,698 40	1,183 62	.....	2,882 02
<i>North-west Territories—Concluded.</i>				
Moosejaw Court-house.....		18 05	.....	18 05
Moosomin ".....	1,065 80	6 85	.....	1,072 65
Prince Albert court-house and jail.....	8,691 18	52 40	.....	8,743 58
" land and registry office.....		134 60	.....	134 60
Regina council buildings.....		855 69	.....	855 69
" court-house.....		706 44	.....	706 44
" Dominion lands office.....		62 42	.....	62 42
" Lieutenant Governor's residence.....		1,034 76	.....	1,034 76
" post office.....		77 90	.....	77 90
" registry office.....		42 75	.....	42 75
Heating, lighting, water, &c., &c., for all buildings in North-west Territories (for details see page 20).....			13,189 03	13,189 03
Totals, N.W. Territories.....	11,455 38	4,175 48	13,189 03	28,819 89
<i>British Columbia.</i>				
Agassiz experimental farm.....	118 00	72 38	.....	190 38
Nanaimo post office, &c.....		255 31	.....	255 31
New Westminster drill shed.....		400 14	.....	400 14
" Dominion lands office.....		7 50	.....	7 50
" resident engineer's office.....		291 98	.....	291 98
" post office, &c.....		483 45	.....	483 45
Vancouver post office, &c.....		636 27	.....	636 27
Victoria clerk of works office.....		110 05	2,482 50	2,592 55
" custom-house.....		131 80	.....	131 80
" drill hall, &c.....	5,255 15	6 75	.....	5,261 90
" marine hospital.....		6 00	.....	6 00
" post office(old).....		163 19	.....	163 19
" " (new).....	54,907 94		.....	54,907 94
William's Head quarantine buildings.....	4,847 12	495 90	.....	5,343 02
Heating, lighting, water, &c., &c., for all buildings in British Columbia (for details see page 21).....			8,799 15	8,799 15
Totals, British Columbia.....	65,128 21	3,060 72	11,281 65	79,470 58
<b>PUBLIC BUILDINGS GENERALLY.</b>				
Printing, stationery, instruments, advertising, travel- ling, &c.....			7,116 81	7,116 81



PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construc- tion and Im- provements.	Repairs.	Staff and Main- tenance.	Total.
HARBOURS AND RIVERS.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia.</i>					
Arisaig.....	1,531 05		648 70		2,179 75
Barrington Passage (Sherrow Channel Wharf).....	2,668 89				2,668 89
Bayfield.....			999 73		999 73
Boularderie—Wharf at Ross Ferry.....		499 97	25 00		524 97
Broad Cove.....			199 84		199 84
Cow Bay.....			9,988 40		9,988 40
Cribbon's Point.....			1,446 96		1,446 96
Digby Pier.....			798 43		798 43
Georgeville.....		999 97	782 11		1,782 08
Grand Etang.....		999 85	100 00		1,099 85
Halifax Graving Dock—Subsidy.....				10,000 00	10,000 00
Hantsport.....		2,784 50			2,784 50
Harbours generally, N.S.....				1,114 60	1,114 60
Joggins.....			399 28		399 28
Judique.....			181 11		181 11
Kelly's Cove.....			299 72		299 72
L'Ardoise.....			25 00		25 00
Larry's River.....	5,591 70				5,591 70
Little Narrows.....			499 65		499 65
Lockeport.....	4,208 69				4,208 69
McNair's Cove.....			699 36		699 36
Mabou.....		1,710 64			1,710 64
Maitland (Hants Co.).....		996 76			996 76
Margaree.....		127 48			127 48
Margaretville.....		6,474 20			6,474 20
Metegomish—Big Island.....		96 81			96 81
Meteghan breakwater.....			3,141 99		3,141 99
Morden.....			1,992 75		1,992 75
North Wallace.....			265 88		265 88
Ogilvie.....			1,537 39		1,537 39
Osborne.....	205 33				205 33
Oyster Pond (Guysboro' Co.).....		990 25			990 25
Porter's Lake.....			100 00		100 00
Port Hood.....			440 00		440 00
Port Joli.....			300 00		300 00
Port L'Hébert.....		500 00			500 00
Port Lorne.....			2,999 87		2,999 87
Port Maitland (Yarmouth Co.).....			3,600 00		3,600 00
Port Mouton.....	2,104 32				2,104 32
Pubnico Head.....		895 00			895 00
Pugwash.....		9,005 92			9,005 92
St. Ann's, North River, Seymour Point.....		99 87			99 87
Summerville.....			100 02		100 02
Three Fathom Harbour.....			500 19		500 19
Trout Cove.....		172 82			172 82
Wallace.....	5,125 68	1,206 00			6,331 68
Whitewater.....		3,999 08			3,999 08
Whycocomagh.....		3,000 00			3,000 00
Windsor, dams, dykes, &c., Avon River.....		3,299 71	328 58		3,628 29
Yarmouth.....	6,906 03		3,234 51		10,140 54
Totals, Nova Scotia.....	28,341 69	37,858 83	35,634 47	11,114 60	112,949 59
<i>Prince Edward Island.</i>					
Annandale.....			100 06		100 06
Bay View.....			20 01		20 01
Belfast.....		499 45			499 45
Brae.....		514 63			514 63
Cascumpec.....			18 26		18 26
Carried forward.....		1,014 08	138 33		1,152 41

# Department of Public Works.

## PART II.—STATEMENT A.—EXPENDITURE.—*Continued.*

Name of Work.	Dredging.	Construc- tion and Im- provement.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>HARBOURS AND RIVERS—<i>Con.</i></b>					
Brought forward .....		1,014 08	138 33		1,152 41
<i>Prince Edward Island—Con.</i>					
China Point.....			13 13		13 13
Charlottetown..... \$2,984 05					
LESS—Refunds for dredg- ing done at private wharfs..... 560 00					
	2,424 05				2,424 05
Harbours generally, P.E.I.....				786 04	786 04
Higgins' Wharf.....			400 02		400 02
Hillsboro' River wharfs—					
Cranberry.....		2,075 35			2,075 35
Haggarty's.....		5,750 00			5,750 00
Red Point.....		4,033 31			4,033 31
Lewis Point Pier.....			1,000 24		1,000 24
Miminigash.....			328 91		328 91
New London.....			300 48		300 48
North Cardigan.....			24 59		24 59
Rustico.....			473 07		473 07
Souris, Knight's Point breakwater.....		10,776 51			10,776 51
Stephens' Pier.....			655 77		655 77
Summerside, protection works.....		806 45			806 45
" dredging..... \$7,437 16					
LESS—Refunds for dredg- ing done at private wharf..... 1,200 00					
	6,237 16				6,237 16
Tignish.....		4,093 65			4,093 65
West Point.....		3,750 30			3,750 30
Totals, Prince Edward Island....	8,661 21	32,299 65	3,334 54	786 04	45,081 44
<i>New Brunswick.</i>					
Buctouche.....			28 13		28 13
Cape Tormentine.....			972 14		972 14
Clifton.....			1,036 56		1,036 56
Dalhousie.....			136 44		136 44
Harbours generally, N.B.....				1,114 61	1,114 61
Herring Cove.....			500 00		500 00
Mizonette.....			249 75		249 75
Partridge Island quarantine wharf.....			200 00		200 00
Quaco.....			50 00		50 00
Richibucto.....	3,946 32				3,946 32
River St. John—					
Between river and Grand					
Lake..... \$ 1,228 80					
Cushing's Mills..... 1,105 92					
Gagetown Creek Canal..... 983 04					
Fredericton..... 3,727 45					
McLean's Wharf..... 163 84					
	\$ 7,209 05				
LESS—Refund for dredg- ing at private wharf.. 1,350 00					
	5,859 05				5,859 05
Grand Falls.....			100 02		100 02
St. Francis.....			297 90		297 90
Tobique.....			764 39		764 39
St. John Harbour—					
Fort Dufferin protection work.....			510 98		510 98
Negro Point breakwater..			1,840 65		1,840 65
Carried forward.....	9,805 37		6,686 96	1,114 61	17,606 94



PART II.—STATEMENT A.—Expenditure—*Continued.*

Name of Work.	Dredging.	Construc- tion and Im- provement.	Repairs.	Staff and Main- tenance.	Total.
<b>HARBOURS AND RIVERS—<i>Con.</i></b>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward .....	9,805 37	.....	6,686 96	1,114 61	17,606 94
<i>New Brunswick—Con.</i>					
River St. John— <i>Con</i>					
Hydrographic survey .....		5,178 72	.....	.....	5,178 72
Dredging.....\$12,080 37					
LESS—Refunds for dredg- ing at private wharfs.. 4,422 50	7,657 87	.....	.....	.....	7,657 87
Shippegan .....		9,999 97	.....	.....	9,999 97
Shediac .....			2 00	.....	2 00
Stony Creek.....			500 00	.....	500 00
Two Rivers.....		442 82	.....	.....	442 82
Tynemouth Creek.....			510 00	.....	510 00
Totals, New Brunswick.....	17,463 24	15,621 51	7,698 96	1,114 61	41,898 32
<i>Quebec.</i>					
Anse à Beaufile .....		577 31	.....	.....	577 31
Anse aux Canards .....			5 00	.....	5 00
Anse aux Gascons .....		5,000 00	.....	.....	5,000 00
Bagotville, St. Alphonse.....			598 98	.....	598 98
Bele St. Paul .....			3,505 75	.....	3,505 75
Berthier (en bas) .....			98 15	.....	98 15
" (en haut).....	10,284 23	.....	8 50	.....	10,292 73
Bic .....			1,248 85	.....	1,248 85
Boucherville .....	397 66	.....	1,079 19	.....	1,476 85
Cacouna .....		4,979 00	.....	.....	4,979 00
Cap à l'Aigle .....			4,754 44	.....	4,754 44
Cap Santé .....		423 49	.....	.....	423 49
Charlemagne .....	945 89	.....	.....	.....	945 89
Chateauguay .....	10,281 00	.....	.....	.....	10,281 00
Chicoutimi .....			1,567 65	.....	1,567 65
Coteau du Lac .....			200 41	.....	200 41
Coteau Landing .....	8,489 22	.....	314 20	.....	8,803 42
Cross Point .....			46 80	.....	46 80
Etang du Nord .....			56 35	.....	56 35
Georgeville .....			678 96	.....	678 96
Grand Pabos .....			799 15	.....	799 15
Harbours generally, Quebec.....	1,350 44	.....	.....	3,620 71	4,971 15
Ile aux Grues .....			105 58	.....	105 58
Ile Gros Bois .....	649 55	.....	.....	.....	649 55
Ile Perrot .....		841 98	.....	.....	841 98
Isle Verte .....			600 00	.....	600 00
Kamouraska .....			736 63	.....	736 63
Lake Megantic, piers—					
Megantic .....			1,244 48	.....	1,244 48
Piopolis .....			623 05	.....	623 05
Lake St. John, piers, &c.—					
Ashouapmouchouan .....			.....	272 88	272 88
Grande Décharge .....			.....	22 70	22 70
Mistassini .....		173 84	.....	568 00	741 84
Peribonka .....			.....	113 70	113 70
Rivière à la Pipe, wharf .....		3,998 21	.....	.....	3,998 21
Roberval .....		742 58	.....	22 72	765 30
Tikouabé (St. Méthode).....		1,574 09	.....	.....	1,574 09
Lancraie .....			531 30	.....	531 30
Laprairie .....	2,716 00	5,538 64	.....	.....	8,254 64
Lévis graving dock .....			.....	6,148 32	6,148 32
L'Islet .....			211 63	.....	211 63
Longueuil .....	2,120 00	.....	160 66	.....	2,280 66
Lotbinière .....		5,284 60	.....	.....	5,284 60
Carried forward.....	37,233 99	29,133 74	19,175 71	10,769 03	96,312 47

# Department of Public Works

## PART II.—STATEMENT A.—Expenditure—Continued.

Name of Work.	Dredging.	Construc- tion and Im- provement.	Repairs.	Staff and Main- tenance.	Total.
HARBOURS AND RIVERS—Con.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	37,233 99	29,133 74	19,175 71	10,769 03	96,312 47
Quebec—Con.					
Lower St. Lawrence—landing places for fishermen, generally.....				33 75	33 75
Magog.....			42 85		42 85
Matane.....		160 68	396 22		556 90
Montmagny.....			52 46		52 46
Murray Bay.....			484 16		484 16
New Carlisle.....			17 95		17 95
Newport River.....			26 53		26 53
Notre Dame du Lac....			32 03		32 03
Philipsburg.....			711 79		711 79
Piers below Quebec, generally.....				2,370 47	2,370 47
Pointe aux Esquimaux.....			17 00		17 00
Pointe aux Saumons.....			294 79		294 79
Pointe aux Trembles.....	755 61				755 61
Port Daniel.....			170 51		170 51
Rimouski.....			4,915 39		4,915 39
Rivière Beauport.....		3,352 58			3,352 58
" du Lièvre lock.....			4,430 04	736 19	5,166 23
" du Loup.....			2,982 43		2,982 43
" du Sud, protection work.....			9 76		9 76
" Gatineau.....		4,415 29			4,415 29
" Ouelle.....			1,004 65		1,004 65
" Richelieu, Beloeil.....	1,278 89	5,974 28	20 66	120 00	7,393 83
" Ste. Anne de la Pêrade.....			48 00		48 00
" St. Francis.....	2,081 45				2,081 45
" St. Lawrence Ship Channel*.....	198,955 98				198,955 98
" St. Louis.....			10 00	90 00	100 00
" St. Maurice, channel between Grandes Piles and Latuque.....		1,048 43			1,048 43
Ste. Agathe des Monts.....		298 00			298 00
Ste. Anicet.....		2,197 95			2,197 95
Ste. Anne de Sorel.....		3,514 68			3,514 68
Ste. Anne de Saguenay.....		2,571 80			2,571 80
Ste. Anne Lapocatière.....			984 17		984 17
Ste. Croix.....			518 12		518 12
Ste. Famille.....			1,809 82		1,809 82
St. Fulgence.....		2,998 04			2,998 04
St. Irénée.....			4,000 00		4,000 00
St. Jean des Chaillons.....		4,998 35			4,998 35
St. Jean Ile d'Orléans.....			480 11		480 11
St. Julien.....			24 30		24 30
St. Michel de Bellechasse.....	591 92				591 92
St. Valentin.....	279 33	5,978 33			6,257 66
Sandy Bay.....		178 23			178 23
Tadousac.....			34 16		34 16
Yamaska lock.....			325 06	841 16	1,166 22
Totals, Quebec.....	241,177 17	66,820 38	43,018 67	14,960 60	365,976 82
Ontario.					
Amherstburg.....	1,752 57	1,019 71			2,772 28
Adolphustown.....	409 18				409 18
Bayfield.....		2,231 36			2,231 36
Belleville.....	216 00				216 00
Bowmanville.....	1,252 08	3,999 99			5,252 07
Burlington Channel piers.....			3,525 37		3,525 37
Carried forward.....	3,629 83	7,251 06	3,525 37		14,406 26

\* This expenditure covers improvements and repairs of plant as well as working expenses.



PART II.—STATEMENT A.—Expenditure—Continued.

Name of Work.	Dredging.	Construc- tion and Im- provement.	Repairs.	Staff and Main- tenance.	Total.
HARBOURS AND RIVERS—Con.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward . . . . .	3,629 83	7,251 06	3,525 37		14,406 26
Ontario—Con.					
Cobourg . . . . .	1,352 61		2,999 86		4,352 47
Collingwood . . . . .	31,472 39				31,472 39
Frenchman's Bay . . . . .	1,242 85				1,242 85
Fort Frances lock . . . . .		40 30			40 30
Goderich . . . . .		7,258 41			7,258 41
Harbours generally, Ontario . . . . .	1,366 49			2,941 17	4,307 66
Hilton, or Marksville . . . . .		5,225 24			5,225 24
Honora (Manitoulin Island) . . . . .		228 81			228 81
Kincardine . . . . .			8,615 92		8,615 92
Kingston graving dock . . . . .				4,738 44	4,738 44
" harbour . . . . .	2,595 56	3,835 84			6,431 40
Lakes Simcoe and Couchiching . . . . .				27 50	27 50
L'Original . . . . .		13,850 27			13,850 27
Meaford . . . . .	197 27	213 84			411 11
Midland . . . . . \$3,450 42					
Less—Refund for dredging done at private wharf. . . . . 49 75	3,400 67				3,400 67
Newcastle . . . . .	1,480 75				1,480 75
North Bay . . . . .		185 22			185 22
Owen Sound . . . . .	14,401 24				14,401 24
Penetanguishene . . . . .			796 57		796 57
Point Edward (Sarnia) . . . . .	1,494 00				1,494 00
Port Arthur . . . . .	384 61		1,000 00		1,384 61
Port Elgin . . . . .	3,056 00	21 20			3,077 20
Port Rowan . . . . .			90 05		90 05
Port Stanley . . . . .	842 82				842 82
Prescott . . . . .	233 41				233 41
Rainy River . . . . .		5,286 29			5,286 29
River Kaministiquia . . . . .	12,856 27				12,856 27
River Sydenham . . . . .	1,649 25				1,649 25
River Saugeen . . . . .	4,139 55				4,139 55
River Thames . . . . .			100 00		100 00
Rondeau . . . . .			17 00		17 00
South Nation River . . . . .	1,475 27				1,475 27
Thornbury . . . . .			978 06		978 06
Tobermoray . . . . .			203 75		203 75
Toronto . . . . .	7,670 50	10,772 26			18,442 76
Whitby . . . . .	1,247 31				1,247 31
Totals, Ontario . . . . .	96,188 65	54,168 74	18,326 58	7,707 11	176,391 08
Manitoba.					
Hnausa . . . . .		13 65			13 65
Lake Manitoba, additional outlet . . . . .		1,997 06			1,997 06
Harbours generally, Manitoba . . . . .		332 87			332 87
Red River mouth . . . . .	7,997 14				7,997 14
Totals, Manitoba . . . . .	7,997 14	2,343 58			10,340 72
British Columbia.					
Columbia River, above Golden . . . . .	4,897 51				4,897 51
" " Revelstoke . . . . .		1,972 24			1,972 24
" narrow between Arrow Lakes . . . . .		5,599 08			5,599 08
Duncan River . . . . .		2,956 75			2,956 75
Esquimalt graving dock . . . . .				11,745 84	11,745 84
Carried forward . . . . .	4,897 51	10,528 07		11,745 84	27,171 42

Department of Public Works.

PART II.—STATEMENT A.—Expenditure—Continued.

Name of Work.	Dredging.	Construc- tion and Im- provement.	Repairs.	Staff and Main- tenance.	Total.
HARBOURS AND RIVERS—Con.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward .....	4,897 51	10,528 07	.....	11,745 84	27,171 42
British Columbia—Con.					
Fraser River, ship channel.....		69,276 48	.....		69,276 48
" removal of snags, &c.....	13,851 87		.....		13,851 87
Harbours generally, B.C. ....			.....	2,679 50	2,679 50
Nanaimo, south channel .....	5,977 77		.....		5,977 77
Nikomekel River .....		159 00	.....		159 00
Okanagan River .....		500 91	.....		500 91
Skeena River.....		3,201 00	.....		3,201 00
Vancouver .....	3,270 68		.....		3,270 68
William's Head quarantine wharf and water service .....		5,999 26	.....		5,999 26
Totals, British Columbia ....	27,997 83	89,664 72	.. . . .	14,425 34	132,087 89
Yukon Provisional District.					
Stikine River, Teslin Lake and Rivers Lewes, Hootalinqua and Yukon—Ex- amination, &c.....		14,000 00	.....		14,000 00
Generally.					
Harbours and rivers generally.....	3,673 05	.....	.....	4,949 42	8,622 47
DREDGES AND DREDGING PLANT.					
Maritime Provinces.....	*	9,623 66	7,999 32	.....	17,622 98
Ontario and Quebec .....	*	6,719 53	12,402 23	.....	19,121 76
Manitoba.....	*	.....	1,748 55	.....	1,748 55
British Columbia..	*	3,483 64	5,958 65	.....	9,442 29
Totals, Dredges .....		19,826 83	28,108 75	.....	47,935 58
SLIDES AND BOOMS.					
St. Maurice district.....		1,651 59	8,148 72	7,678 78	17,479 09
Ottawa district.....				22,310 25	22,310 25
Ottawa River.....		713 81	4,201 07	.....	4,914 88
" Chenaux boom, allowance to Improvement Co....			.....	1,799 30	1,799 30
Gatineau River, Que.....			825 85	.....	825 85
Coulonge " .....			2,785 29	.....	2,785 29
Black " .....			2,507 02	.....	2,507 02
Dumoine " .....		81 00	2,362 27	.....	2,443 27
Madawaska River, Ont....		550 00	687 87	.....	1,237 87
Petewawa " .....		66 00	1,414 39	.....	1,480 39
Trent (or Newcastle) district ..		199 95	999 19	1,970 00	3,169 14
Collection of slide and boom dues.....			.....	2,474 81	2,474 81
Totals, Slides and Booms ....		3,262 35	23,931 67	36,233 14	63,427 16

\* Working expenses apportioned to harbours and rivers above.



PART II.—STATEMENT A.—Expenditure—Continued.

Name of Work.	Dredging.	Construc- tion and Im- provement.	Repairs.	Staff and Mainten- ance.	Total.
ROADS AND BRIDGES.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Quebec.					
Hull, Pond Creek bridge.....			210 01		210 01
Ontario.					
Burlington Channel bridge.....			430 35	2,090 23	2,520 58
Ottawa city bridges and streets maintain- ed by Government—					
Chaudière “Union Bridge”.....			158 23		158 23
Chaudière minor bridges, &c.—					
Ottawa side .....			1,271 45		1,271 45
Hull side .....		1,166 44	397 55		1,563 99
Maria street bridge.....			79 23		79 23
Sappers’ bridge.....		2,966 09	115 34		3,081 43
Wellington street.....		6,610 78	3,811 34		10,422 12
Lighting all the above, \$2,210; water- ing, \$213.56; snow cleaning, \$304.08				2,727 64	2,727 64
York Bridge.....			7 50	25 00	32 50
North-west Territories.					
Banff Bridge (Bow River).....			949 79		949 79
Battleford Bridge (Battle River).....			271 83		271 83
Calgary Bridge (Bow River).....			374 14		374 14
Edmonton Bridge (Saskatchewan) .....		43,569 14			43,569 14
Bridges generally, (N.W.T.).....				836 35	836 35
Macleod Bridge (Old Man’s River).....			579 35		579 35
Totals, Roads and Bridges,.....		54,312 45	8,656 11	5,679 22	68,647 78
TELEGRAPH LINES.					
Nova Scotia.					
Cape Sable line.....				153 68	153 68
Cheticamp “ .....			1,228 00	956 63	2,184 63
Low Point “ .....				54 15	54 15
Meat Cove “ .....				1,914 55	1,914 55
St. Paul’s Island line .....			932 30		932 30
Prince Edward Island.					
P.E. Island and mainland cable (subsidy) .....				1,946 66	1,946 66
New Brunswick.					
Bay of Fundy line .....			2,147 80	1,146 11	3,293 91
Escuminac line.....				505 39	505 39
Quebec.					
Anticosti—Gaspé line... ..				2,887 31	2,887 31
Grosse Isle quarantine line. ....			66 00	738 74	804 74
Magdalen Island line.....			2,485 22	2,269 03	4,754 25
North Shore St. Lawrence lines—					
East of Bersimis .....		13,780 34		3,758 34	17,538 68
West “ .....				3,898 55	3,898 55
Isle aux Coudres connection.. ..		1,267 83			1,267 83
St. Alexis and Anse St. Jean.....		2,014 52			2,014 52
Carried forward.....		17,062 69	6,859 32	40,229 14	44,151 15

# Department of Public Works.

## PART II.—STATEMENT A.—Expenditure—*Continued.*

Name of Work.	Dredging.	Construc- tion and Im- provement.	Repairs.	Staff and Mainten- ance.	Total.
TELEGRAPH LINES— <i>Con.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward . . . . .		17,062 69	6,859,32	40,229 14	44,151 15
<i>Maritime Provinces and Gulf, generally.</i>					
SS. "Newfield's" cable laying plant, and storage tank at Halifax . . . . .			2,249 84		2,249 84
General expenses . . . . .				2,507 81	2,507 81
<i>Ontario.</i>					
Pelee Island line . . . . .		910 82		151 16	1,061 98
<i>North-west Territories.</i>					
Generally . . . . .				14,353 22	14,353 22
<i>British Columbia.</i>					
Alberni—Cape Beale line . . . . .		1,327 12			1,327 12
Ashcroft—Barkerville line . . . . .				3,130 12	3,130 12
Nanaimo—Comox line . . . . .				3,990 83	3,990 83
Victoria—Cape Beale line . . . . .				4,154 50	4,154 50
<i>Generally.</i>					
Telegraph service generally . . . . .				1,371 05	1,371 05
Totals, Telegraphs . . . . .		19,300 63	9,109 16	49,887 83	78,297 62
MISCELLANEOUS.					
Statue of Her Majesty the Queen in com- memoration of the Diamond Jubilee . . . . .		425 05			425 05
Monument to Hon. Alexander Mac- kenzie . . . . .		419 40			419 40
Funeral of the late Sir John Thompson . . . . .				7,053 24	7,053 24
Gratuity to the widow of late D. Mc- Farlane . . . . .				140 00	140 00
Gratuity to widow of late William Com- per . . . . .				37 50	37 50
Surveys and inspections . . . . .				17,387 47	17,387 47
Public Works Agency, B.C. . . . .				1,790 82	1,790 82
Temporary employees—					
Secretary and Accountant's staffs . . . . .				19,991 95	19,991 95
Chief Architect's staff . . . . .				20,000 00	20,000 00
Chief Engineer's " . . . . .				38,138 43	38,138 43
Supt. Telegraph Service staff . . . . .				2,900 00	2,900 00
Departmental photographer, one-haif salary . . . . .				699 96	699 96
Totals Miscellaneous . . . . .		844 45		108,139 37	108,983 82



PART II.—STATEMENT A.—Expenditure—*Concluded.*

Name of Work.	Dredging.	Con- struction and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total
RECAPITULATION.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Totals, Public Buildings.—					
Nova Scotia.....		87,510 85	4,008 18	21,187 62	112,706 65
Prince Edward Island.....		612 17	1,283 10	4,649 17	6,544 44
New Brunswick.....		4,678 84	3,489 29	19,138 47	27,306 60
Quebec.....		43,119 89	31,116 19	46,373 58	120,609 66
Ontario.....		214,317 75	133,530 54	196,225 91	544,074 20
Manitoba.....		24,312 82	2,644 97	15,569 96	42,527 75
North-west Territories.....		11,455 38	4,175 48	13,189 03	28,819 89
British Columbia.....		65,128 21	3,060 72	11,281 65	79,470 58
Public buildings generally.....				7,116 81	7,116 81
Totals, Harbours and Rivers.—					
Nova Scotia.....	28,341 69	37,858 83	35,634 47	11,114 60	112,949 59
Prince Edward Island.....	8,661 21	32,299 65	3,334 54	786 04	45,081 44
New Brunswick.....	17,463 24	15,621 51	7,698 96	1,114 61	41,898 32
Quebec.....	241,177 17	66,820 38	43,018 67	14,960 60	365,976 82
Ontario.....	96,188 65	54,168 74	18,326 58	7,707 11	176,391 08
Manitoba.....	7,997 14	2,343 58			10,340 72
British Columbia.....	27,997 83	89,664 72		14,425 34	132,087 89
Yukon Provisional District.....		14,000 00			14,000 00
Harbours and Rivers generally.....	3,673 05			4,949 42	8,622 47
Totals, Dredges and dredging plant.....		19,826 83	28,108 75		47,935 58
" Slides and booms.....		3,262 35	23,931 67	36,233 14	63,427 16
" Roads and bridges.....		54,312 45	8,656 11	5,679 22	68,647 78
" Telegraph lines.....		19,300 63	9,109 16	49,887 83	78,297 62
" Miscellaneous.....		844 45		108,139 37	108,983 82
Grand totals ..	431,499 98	861,460 03	361,127 38	589,729 48	2,243,816 87

(End of Statement A.)

# Department of Public Works.

## PART II—Continued.

STATEMENT B.—Showing the cost of the following services for each Public Building, viz.:—

Rent; Salaries of, and Supplies for, Caretakers, Engineers, &c.; Heating; Lighting; Water; (the total for each province being carried into Statement "A.")

	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia.</i>						
Amherst post office.....		388 27	253 60	324 75	20 00	986 62
Annapolis ".....		389 55	149 37	146 96	40 00	725 88
Antigonish ".....		381 51	72 35	16 65	10 00	480 51
Arichat custom-house.....			52 00			52 00
" post office.....			74 00			74 00
" savings bank.....			35 00			35 00
Badddeck post office.....		195 33	82 50	22 19		300 02
Dartmouth ".....		248 92	63 36	124 20	12 75	449 23
Halifax assistant receiver general's office	1,200 00		57 60	74 10	52 20	1,383 90
" Dominion building.....		1,982 08	683 19	2,849 32	979 89	6,494 48
" engineer's office.....	360 00					360 00
" examining warehouse.....	1,000 00	345 93	134 75	52 80	114 36	1,647 84
" immigrant shed.....		568 00	306 28	425 33		1,299 61
" penitentiary.....	0 24					0 24
Lunenburg post office.....		297 05	150 50	192 50	59 00	699 05
New Glasgow ".....		287 00	153 95	357 34	100 00	898 29
North Sydney ".....		354 71	104 55	316 00	20 16	795 42
Pictou custom-house.....		288 10	117 64			405 74
" post office.....		18 76	87 12	160 75	3 50	270 13
Sydney ".....		369 26	185 65	348 52	25 00	928 43
Truro ".....		490 45	236 00	278 76	45 00	1,050 21
Windsor ".....		200 02	176 60	100 72	25 00	502 34
Yarmouth ".....		389 98	220 50	630 20	108 00	1,348 68
Totals, Nova Scotia carried to Statement A, page 3.....	2,560 24	7,194 92	3,396 51	6,421 09	1,614 86	21,187 62
<i>Prince Edward Island.</i>						
Charlottetown Dominion building.....		1,706 16	454 93	987 75	225 00	3,373 84
" engineer's office.....	230 00					230 00
Montague post office.....		187 57	49 64	23 75		260 96
Summerside ".....		387 52	269 80	127 05		784 37
Totals, P. E. Island carried into Statement A, page 3.....	230 00	2,281 25	774 37	1,138 55	225 00	4,649 17
<i>New Brunswick.</i>						
Bathurst post office, &c.....		431 92	367 95	12 50		812 37
Carleton, St. John, post office, &c.....		91 67	43 73	151 05	12 00	298 45
Chatham post office, &c.....		294 20	257 80	125 28		677 28
Dalhousie ".....		380 87	199 13	9 24		589 24
Fredericton ".....		378 67	269 90	600 63	50 00	1,299 20
Moncton ".....		393 14	223 10	397 20	167 50	1,180 94
Newcastle ".....		394 35	231 95	213 90		840 20
Portland, St. John, post office.....	130 90		31 96		9 50	172 36
St. John custom-house.....	22 00	1,733 04	1,049 35	439 46	506 83	3,750 68
" post office.....		1,279 41	468 82	3,591 35	392 68	5,732 26
" savings bank.....		2 00	250 38	114 41	17 52	384 31
Carried forward.....	152 90	5,379 27	3,394 07	5,655 02	1,156 03	15,737 29



PART II — STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—*Continued.*

	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>New Brunswick—Concluded.</i>						
Brought forward.....	152 90	5,379 27	3,394 07	5,655 02	1,156 03	15,737 29
St. Stephen's post office, &c.....		378 67	114 38	406 20	64 00	963 25
Sussex ".....		194 66	195 30	8 30		398 26
Tracadie lazaretto.....		150 00	1,075 70			1,225 70
Woodstock post office, &c.....		408 43	211 54	160 00	34 00	813 97
Totals, New Brunswick carried into Statement A, page 3.....	152 90	6,511 03	4,990 99	6,229 52	1,254 03	19,138 47
<i>Quebec.</i>						
Aylmer post office.....		55 00	172 80	32 51	38 75	299 06
Coaticook ".....		386 72	240 75	205 95	40 00	873 42
Dundee custom-house.....			30 00			30 00
Hull post office, &c.....		150 00	286 75	346 62	116 52	899 89
Joliette ".....		355 13	247 88	81 00	108 00	792 01
Lachine ".....		95 97	137 15	60 60	29 52	323 24
Laprairie ".....		50 79	107 02	31 23	40 00	229 04
Lévis immigrant building.....			42 00			42 00
Montreal Civil Service exam. office.....	100 00					100 00
" custom-house.....		1,384 55	556 90	391 60	332 71	2,665 76
" Dominion public buildings.....		1,130 00				1,130 00
" drill hall.....		511 00				511 00
" examining warehouse.....		1,358 32	1,584 20	542 92	572 05	4,057 49
" immigration office.....	416 60					416 60
" inland revenue office.....		595 66	159 56	160 08	103 79	1,019 09
" post office.....		4,351 60	646 11	4,111 20	1,445 77	10,554 68
Quebec culler's office.....		513 35	262 96			776 31
" custom-house.....		518 45	658 55	49 87	800 00	2,026 87
" Dominion public buildings.....					39 50	39 50
" engineer's office.....	144 00					144 00
" examining warehouse.....		1,388 27	735 74	37 99	450 00	2,612 00
" immigrant building.....			377 20	675 00		1,052 20
" observatory.....					50 00	50 00
" post office.....		1,327 13	733 89	943 44	766 00	3,770 46
" Queen's wharf building.....			306 86		750 00	1,056 86
Richmond post office.....		9 27	210 00			219 27
Rimouski ".....		141 79	288 85	11 70		442 34
Rivière du Loup (Fraserville) post office.....		247 16	297 00	10 75		554 91
Sherbrooke post office, &c.....		443 34	284 93	453 25	37 50	1,219 02
Sorel ".....		529 94	255 10	236 60	250 00	1,271 64
St. Henri ".....			111 00	103 44	29 28	243 72
St. Hyacinthe ".....		401 09	176 50	232 55	150 00	960 14
St. Jérôme ".....		75 00	161 25	176 00	57 84	470 09
St. John's ".....		330 76	126 60	250 00	60 00	767 36
St. Lin ".....	300 00					300 00
St. Roch, Quebec, post office.....		7 20	60 40	71 41		139 01
Three Rivers custom-house.....		296 22	309 21	99 62	84 00	789 05
" post office.....		388 05	187 50	97 98	60 00	733 53
Valleyfield ".....	254 70		52 00	29 00	45 00	380 70
West Farnham ".....		2 45	54 75	60 00	10 00	127 20
Totals, Quebec, carried into State- ment A, page 4.....	1,215 30	17,044 21	9,861 41	9,502 31	6,466 23	44,089 46
<i>Ontario.</i>						
Almonte post office, &c.....		384 62	139 71	31 96	152 00	708 29
Amherstburg post office, &c.....		400 86	171 50	116 00	32 50	720 86
Barrie ".....		393 17	242 50	146 41	50 00	832 08
Carried forward.....		1,178 65	553 71	294 37	234 50	2,261 23

# Department of Public Works.

PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—*Continued.*

	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
Ontario—Continued.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....		1,178 65	553 71	294 37	234 50	2,261 23
Belleville post office, &c.....		587 22	320 62	381 60	53 25	1,352 69
Berlin ".....		386 02	272 82	280 93	44 00	983 77
Brampton ".....		387 62	151 58	170 80	44 25	754 25
Brantford ".....		590 65	295 76	302 99	63 00	1,252 40
Brockville ".....		390 99	221 40	496 65	170 00	1,279 04
Carleton Place ".....		288 90	113 00	50 20		452 10
Cayuga ".....		45 84	105 00	52 70		203 54
Chatham ".....		372 52	191 98	183 57	40 00	788 07
Clifton ".....		298 20	237 60	325 00	51 00	911 80
Cobourg ".....		389 82	196 64	288 20	45 50	920 16
Cornwall ".....		457 86	250 00	482 10	93 25	1,283 21
Dundas ".....	500 00		16 48	63 39		579 87
Galt ".....		394 62	174 75	294 20	41 48	905 05
Gananoque custom-house.....			145 60	94 00		239 60
" post office, &c.....			78 00	141 00		219 00
Goderich ".....		355 41	206 15	33 44	60 00	655 00
Guelph ".....		385 27	174 89	224 53	37 44	822 13
Hamilton custom-house.....		566 00		74 93		640 93
" drill shed.....		340 00				340 00
" post office.....		925 61	829 00	1,589 89	1,000 00	4,344 50
Kingston custom-house.....		113 90	265 45	105 60	42 35	527 30
" examining warehouse.....			22 65		0 55	23 20
" inland revenue office.....				84 60	64 65	149 25
" military college.....		1,360 00				1,360 00
" post office.....		108 55	176 65	467 10	27 48	779 78
Lindsay post office, &c.....		385 67	157 80	75 00	20 00	638 47
London custom-house.....		1,006 32	494 24	434 81	140 00	2,075 37
" post office.....		605 50	467 94	1,329 56	80 00	2,483 00
Napanee post office, &c.....		465 00	187 25	166 92	69 45	888 62
Orangeville post office, &c.....		422 90	134 19	141 00	20 00	718 09
Orillia ".....		105 34	150 25	78 40	31 25	365 24
Ottawa experimental farm.....			1,753 78	158 03	204 00	2,115 81
" geological museum.....		528 00	913 27	205 50		1,646 77
" national art gallery and fisheries museum.....		511 27	97 33			608 60
" north-west mounted police stores.....			69 91			69 91
" parliamentary and departmental buildings.....		22,101 00	29,081 16	19,249 66	14,500 00	84,931 82
" post office.....		840 00	174 18	2,044 17		3,058 35
" printing bureau.....		3,165 22	4,052 80	611 90		7,829 92
" supreme court.....		1,342 75	445 75	63 90		1,852 40
Ottawa rented buildings:—						
Bank of Ottawa (Dept. of the In- terior).....	1,600 00			60 49	90 82	1,751 31
Boundary commission offices.....	250 00			6 31	8 40	264 71
Coal shed (canal basin).....	400 00					400 00
Central chambers (Dept. of the In- terior).....	200 00					200 00
Civil Service Commission offices.....	15 00					15 00
Departmental photographer's office.....	136 00			3 00		139 00
Durie's Chambers (Militia Dept.)..	180 00			12 39		192 39
Examining warehouse.....	850 00			12 60	35 07	897 67
French translators' office.....	315 00		25 37	94 35	9 44	444 16
Geological museum annex.....	600 00				76 76	676 76
Molson's Bank (Marine Dept.)....	399 98			15 74		415 72
Nagle building (Customs Dept.)....				16 30	32 40	48 70
Observatory.....				32 00		32 00
Slater's chambers (Model room)....	1,275 00				104 70	1,379 70
Workshops and lumber yard of Dept. of Public Works.....	830 00	528 00	1,132 76	360 90	122 83	2,974 49
Carried forward.....	7,550 98	41,930 62	7,841 33	31,654 72	17,657 82	143,141 95



PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—Continued.

	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Ontario.—Concluded.</i>						
Brought forward.....	7,550 98	41,930 62	7,841 33	31,654 72	17,657 82	143,141 95
Pembroke post office .....		418 65	208 20	198 00	56 00	880 85
Peterboro' custom-house.. ..			109 00	78 75	62 50	250 25
" post office .....		526 15	161 91	433 00	93 75	1,214 81
Petrolia " &c.....		434 99	136 82	24 20	32 23	628 24
Port Arthur " &c.....		321 35	153 01	33 35		507 71
Port Colborne " .....		272 46	31 25	71 50		375 21
Port Hope " &c.....		428 15	192 50	245 80		866 45
Prescott custom-house .....			181 65		35 00	216 65
" post office .....		419 16	114 05	149 35	35 00	717 56
Smith's Falls post office, &c .....		312 80	136 23	93 47	85 00	627 50
Stratford " &c .....		675 60	415 61	190 40	64 67	1,346 28
Strathroy " .....		412 00	169 85	28 75	3 09	613 69
St. Catharines " .....		426 21	231 05	200 37	57 00	914 63
St. Thomas " .....		415 00	210 00	536 25	86 19	1,247 44
Toronto Civil Service examination office .....	45 00					45 00
Toronto custom-house .....		645 65	349 29	114 03	21 75	1,130 72
" Dominion Public buildings ..		1,220 32				1,220 32
" drill hall .....		856 94				856 94
" engineer's office .....	300 00			8 00		308 00
" examining warehouse .....		4,396 99	764 13	76 68	139 63	5,377 43
" inland revenue office .....		617 50	266 46	270 18	30 44	1,184 58
" post office.....	120 00	908 86	804 13	2,846 65	584 80	5,264 44
Trenton " .....		464 85	198 00	216 10	75 00	953 95
Walkerton " .....		384 98	226 50	155 52	15 00	782 00
Windsor " .....		694 23	481 25	730 38	96 00	2,001 86
Wolf Island, Kingston, custom-house..			34 92			34 92
Totals Ontario carried into Statement A, page 5.....	8,015 98	57,183 46	49,923 52	38,355 45	19,230 87	172,709 28
<i>Manitoba.</i>						
Brandon experimental farm.....			149 50			149 50
" immigrant building.....			148 35			148 35
" post office, &c.....		641 08	565 80	644 65	76 00	1,927 53
Lake Dauphin Dominion lands office..	220 00		67 37			287 37
Minnedosa Dominion lands office....	135 00		95 00			230 00
Winnipeg clerk of works office .....		4 50				4 50
" crown timber office.....			233 80			233 80
" custom-house.....		14 13	584 50	251 60	96 00	946 23
" Dominion lands office.....				41 99	30 00	71 99
" engineer's office.....	58 00					58 00
" examining warehouse.....			384 10	9 72		393 82
" immigrant shed .....		75 00	730 59	168 33	125 00	1,098 92
" post office.....		2,643 58	2,570 49	1,247 00	550 00	7,011 07
Totals Manitoba, carried into State- ment A, page 6...	413 00	3,378 29	5,529 50	2,363 29	877 00	12,561 08
<i>North-west Territories.</i>						
Alameda Dominion lands office.....	155 00		37 95			192 95
Banff park buildings.....			100 12			100 12
Battleford Dominion lands office .....			7 00			7 00
Carried forward.....	155 00		145 07			300 07

# Department of Public Works.

## PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—*Concluded.*

	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>North-west Territories.</i>						
Brought forward.....	155 00	.....	145 07	.....	.....	300 07
Calgary court-house, &c.....		607 00	421 85	.....	350 00	1,378 85
" immigrant building.....		.....	128 27	.....	.....	128 27
" land and registry office.....		5 00	77 30	.....	.....	82 30
" post office.....		542 45	520 49	465 45	425 00	1,953 39
Edmonton Dominion lands office.....		.....	101 44	.....	.....	101 44
" immigrant shed.....		.....	152 50	.....	.....	152 50
" registry office.....		427 65	.....	151 60	.....	579 25
Indian Head experimental farm.....		.....	223 50	.....	.....	223 50
Lethbridge court-house.....		6 50	147 25	56 06	.....	209 81
" Dominion lands office.....	60 00	.....	.....	.....	.....	60 00
" post office.....		437 50	6 50	30 94	75 00	549 94
Macleod custom-house.....		.....	81 75	.....	.....	81 75
" court-house.....	125 00	175 75	9 00	.....	.....	309 75
Moosejaw court-house.....		412 90	93 25	4 00	.....	510 15
Moosomin ".....		622 80	338 38	.....	.....	961 18
Prince Albert " &c.....	216 00	649 67	218 90	2 00	.....	1,086 57
" land and registry office.....		421 00	80 00	10 80	.....	511 80
Red Deer Dominion lands office.....	96 00	.....	65 00	.....	.....	161 00
Regina clerk of works office.....	52 50	1 65	.....	12 00	.....	66 15
" court-house.....		907 57	652 12	66 72	.....	1,626 41
" Dominion lands office.....	320 60	.....	150 00	.....	.....	470 60
" immigrant building.....		.....	9 00	.....	.....	9 00
" land titles office.....	300 00	.....	190 25	.....	.....	490 25
" post office.....		5 55	209 00	.....	.....	214 55
Wolseley court house.....		555 00	191 45	17 10	.....	763 55
Yorkton Dominion lands office.....	132 00	.....	75 00	.....	.....	207 00
Totals N.W. Territories carried into Statement A, page 6.....	1,457 10	5,777 99	4,287 27	816 67	850 00	13,189 03
<i>British Columbia.</i>						
Agassiz experimental farm.....		.....	54 50	.....	.....	54 50
Duncan Indian office.....		.....	18 44	.....	.....	18 44
Kamloops Dominion lands office.....	165 00	.....	25 50	.....	.....	190 50
Metlakatla Indian office.....		.....	29 25	.....	.....	29 25
Nanaimo post office, &c.....		627 55	126 35	275 00	45 00	1,073 90
New Westminster engineer's office.....	461 00	12 95	34 50	8 22	.....	516 67
" post office, &c.....		616 00	104 69	191 35	55 01	967 05
Vancouver drill hall.....		.....	58 16	.....	.....	58 16
" post office, &c.....		507 76	379 70	1,266 15	177 56	2,331 17
Victoria appraiser's office.....		.....	15 22	22 40	24 00	61 62
" barracks.....		.....	32 22	.....	.....	32 22
" clerk of works office.....	130 00	5 75	.....	70	.....	136 45
" custom-house.....		.....	132 62	52 20	25 12	209 94
" drill hall.....		.....	158 29	.....	.....	158 29
" Indian office.....		.....	42 27	.....	.....	42 27
" military store.....		.....	97 22	.....	.....	97 22
" post office.....		642 30	123 92	1,134 45	27 73	1,928 40
" weights and measures office.....		.....	29 00	.....	6 00	35 00
William's Head quarantine station.....		.....	858 10	.....	.....	858 10
Totals British Columbia carried into Statement A, page 7.....	756 00	2,412 31	2,319 95	2,950 47	360 42	8,799 15

(End of Statement B.)



PART II—*Continued.*

STATEMENT C.—Showing amount loaned by Government under the authority of special Acts of Parliament and upon the recommendation of the Minister of Public Works, during the fiscal year 1897-98.

To Montreal Harbour Commissioners for improvement of Montreal Harbour (Act 59 Vict., chap. 10) . . . . .	\$110,000 00
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DEPARTMENT OF PUBLIC WORKS,  
ACCOUNTANT'S OFFICE,  
OTTAWA, 20th February, 1899.

A. G. KINGSTON,  
*Accountant.*

PART III

REPORT ON PUBLIC BUILDINGS

THROUGHOUT THE DOMINION

FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1898

BY THE

CHIEF ARCHITECT





# Department of Public Works

## REPORT OF THE CHIEF ARCHITECT.

DEPARTMENT OF PUBLIC WORKS, CANADA,

CHIEF ARCHITECT'S OFFICE,

OTTAWA, 14th December, 1898.

SIR,—I have the honour to submit the following report on the construction of new works and the repairs made to public buildings under the control of this department, for the fiscal year ended the 30th June, 1898.

I have the honour to be, sir,

Your obedient servant,

D. EWART,

*Chief Architect.*

E. F. E. ROY, Esq.,

Secretary, Department of Public Works, Canada.

### PROVINCE OF PRINCE EDWARD ISLAND.

#### CHARLOTTETOWN.

##### PUBLIC BUILDING.

The heating boiler was retubed and repaired; the woodwork of the post-master's room was repainted; repairs were made to the plastering, roof covering and plumbing, and a wire boundary fence was erected.

#### SUMMERSIDE.

The gate posts were renewed. The original heating furnace, being worn out, was removed and two new hot water (Buffalo) furnaces were put in, the hot water coils and plumbing were repaired; part of the inside woodwork was painted and the plaster tinted; repairs were made to roof covering and an asphalt sidewalk with crossings laid along street line.



## PROVINCE OF NOVA SCOTIA.

## AMHERST.

An asphalt sidewalk was laid along the street line.

## ANNAPOLIS.

The space between post office box screen and ceiling was screened with wire mesh. The roof was repaired and flag-staff painted.

## ANTIGONISH.

The shingling of roof was renewed, minor repairs were made to woodwork, painting, &c., and a new smoke pipe for furnace was supplied.

## ARICHAT.

## POST OFFICE.

A fire-proof safe was supplied for the use of the officials.

## BADDECK.

## PUBLIC BUILDING.

The inside and outside woodwork and fence were painted, the plaster kalsomined; repairs were made to the coal house and some matting was supplied.

## DARTMOUTH.

A coal bin was constructed in cellar.

Work superintended by C. E. W. Dodwell, resident engineer and inspector of public buildings, Nova Scotia, Halifax, N.S.

## HALIFAX, N.S.

## DOMINION BUILDING.

The electric light wiring being inefficient and not in accordance with the regulations of the board of underwriters, was taken out and the building properly wired. Fittings were supplied for the inspector of customs' office and the parcels office; hose and couplings were supplied and extensive repairs made to furniture, post office boxes, heating and water service.

Work supervised by C. E. W. Dodwell, resident engineer and inspector of public buildings, Nova Scotia, Halifax, N.S.

Contractor for wiring, Graham & Pickles, Halifax, N.S.

## Department of Public Works

### DRILL HALL.

This building is roofed in and is expected to be ready for occupation by the close of the calendar year. Tenders are invited for a heating and ventilating apparatus and for wiring the building for electric light. Plans are being prepared for the various fittings and furniture.

Plan, &c., prepared and work superintended by this department. Resident engineer and inspector of public buildings, Nova Scotia, C. E. W. Dodwell, C.E., Halifax, N.S.

Clerk of works, Dominick Healy, Halifax, N.S.

Contractor, John E. Askwith, Ottawa.

### EXAMINING WAREHOUSE.

The roof covering was repaired throughout; a partition was put in to form stamp room and the goods hoist overhauled and repaired.

Work supervised by C. E. W. Dodwell, resident engineer and inspector of public buildings, Nova Scotia, Halifax, N.S.

### IMMIGRATION BUILDING.

The water-closets were repaired under the supervision of C. E. W. Dodwell, resident engineer and inspector of public buildings, Nova Scotia, Halifax, N.S.

### QUARANTINE (DEEP WATER TERMINUS).

The steward's residence was thoroughly repaired, and the detention building was furnished with tables and chairs.

Work supervised by C. E. W. Dodwell, resident engineer and inspector of public buildings, Nova Scotia, Halifax, N.S.

### LIVERPOOL.

#### POST OFFICE.

On January 13th last, a site was purchased on the corner of Main and Market streets, having frontages of 60 feet and 100 feet respectively. Plans are in course of preparation and tenders for the construction of the building are to be asked at an early date. There is to be a main building 41 feet by 31 feet consisting of a stone basement to accommodate the heating furnace, fuel and stores, a ground floor for the post office, a first floor for the customs and inland revenue offices (4 rooms), and an attic for the caretaker's apartments. The walls on the ground and first floor are to be brick and the attic wooden mansard, the flat covered with pitch and gravel and the slopes with slate. There is to be a one storey annex 24 feet 8 inches by 26 feet 2 inches, of brick on a stone foundation, with wood roof. On the street corner the brick work is to be carried up into the mansard as a gable and to be surmounted by a turret.

### LUNENBURG.

#### POST OFFICE, &C., BUILDING.

The roof covering was painted. A Dominion ensign was supplied.



## NAPPAN.

## EXPERIMENTAL FARM.

A water service was put in to supply the residence and outbuildings; additions were made to silo and to the heating apparatus at residence and some usual and ordinary general repairs were made.

## NEW GLASGOW.

## POST OFFICE, &amp;C., BUILDING.

The rain water conductors and down-pipes were repaired and in part renovated, the plastering of the interior of the building was kalsomined, the wood-work painted and the stonework of walls and fences repointed.

## NORTH SYDNEY.

## POST OFFICE, &amp;C., BUILDING.

A large portion of the plumbing was generally overhauled and put in order.

## PICTOU.

## CUSTOM HOUSE.

Repairs were made to woodwork and plumbing. The sewer was overhauled and repaired; the walls and ceilings were whitewashed and general repairs were carried out.

## SYDNEY.

## POST OFFICE, &amp;C., BUILDING.

Repairs to furnace, heating apparatus, brick wall and woodwork and painting, glazing and plastering done; new door locks were supplied.

## TRURO.

## POST OFFICE, &amp;C., BUILDING.

The heating apparatus was repaired; the cesspool was cleaned and some minor general repairs effected.

## WINDSOR.

## POST OFFICE, &amp;C., BUILDING.

Previous to October 14th, 1897, on which date the building was destroyed by fire, the brickwork of the gables and chimney was pointed and the gable coping reset, the galvanized deck roof and the flag-pole were repainted, and the building was wired for 14 electric lights.

## Department of Public Works.

The building is being re-erected by days' labour, after a slight change in plan; the staircase annex being replaced by a one storey annex 20 feet by 16 feet inside dimensions, and the stairway being placed in the main building. The additional office will be furnished with a brick safe. There will be a water-closet and urinal room on the ground floor in rear of the main stairway, and one in attic above the one on ground floor.

Plans for a heating apparatus are in course of preparation.

Work superintended by J. H. Ellis, clerk of works, from the departmental staff, Ottawa.

### YARMOUTH.

#### PUBLIC BUILDING.

A part of the outside woodwork was repainted.

## PROVINCE OF NEW BRUNSWICK.

### BATHURST.

#### PUBLIC BUILDING.

A new entrance porch was constructed, a brass screen supplied to the post office, repairs to yard gates, &c., made.

### CARLETON (St. John), N.B.

#### POST OFFICE.

Repairs were made to slating and flashing of roof, to water service, stoves, pipes, &c., under the supervision of W. J. McCordock, of this department, St. John, N.B.

### FREDERICTON.

#### PUBLIC BUILDING.

A new hardwood floor was laid in post office, repairs were made to the plastering and glazing, the ceilings were whitened, the walls and painted woodwork were painted one coat and the hardwood fittings and floors oiled. New floor oil-cloth was laid in postmaster's room and some furniture repaired.

### MONCTON.

#### PUBLIC BUILDING.

The flagging of sidewalk was relaid and repaired and repairs made to tank, letter boxes, plumbing, &c.

## NEWCASTLE.

## PUBLIC BUILDING.

A new lamp for entrance door and a quantity of office furniture were supplied.

## PARTRIDGE ISLAND.

## QUARANTINE STATION.

The building referred to in my last report, intended as a shelter for the disinfecter, baths, water tanks, &c., was completed and furnished with a steam-heating apparatus.

Works under the charge of W. J. McCordock, of this department, St. John, N.B.

Contractor, Mr. Jno. Duffy.

## PORTLAND (St. John).

## POST OFFICE.

Repairs were made to plumbing, sewer, water service, stoves, &c.

Work carried out under the supervision of W. J. McCordock, of this department, St. John, N.B.

## ST. JOHN.

## CUSTOM HOUSE.

The rooms of the signal officers, in the south tower, were finished and painted. Some large plates of glass over main entrance, which were broken, were replaced, and minor repairs were made to roof covering, heating, bells, locks, windows, &c., &c.

Work carried out under the supervision of W. J. McCordock, of this department, St. John, N.B.

## POST OFFICE.

A portion of the hardwood floor of the public lobby was renewed; the worn-out galvanized iron gutters along east side of building were removed and replaced by new. The hoist was repaired, altered, renovated and improved generally, and the w.c., bells, floors, heating apparatus and glazing repaired; new locks, keys and some articles of furniture, &c., were supplied.

Work carried out under the supervision of W. J. McCordock, of this department.

## SAVINGS BANK.

A large plate of glass was inserted in wall between banking and assistant receiver general's room; a new brick coal and ash vault was built; the flag-staff was renewed and painted; the outer walls were pointed; the woodwork, iron gates,



## Department of Public Works.

fence and rain water conductors were painted and repairs were made to pump, fire-box, electric bells, window sashes, cords, weights, &c.

Work carried out under the supervision of W. J. McCordock, of this department.

### ST. STEPHEN.

#### PUBLIC BUILDING.

The wooden wharf was renewed. A Dominion ensign was supplied and some minor repairs executed.

### SUSSEX.

#### PUBLIC BUILDING.

Some new blinds were supplied for windows.

### TRACADIE.

#### LAZARETTO.

An additional storage tank was placed in attic, supported by posts resting on basement floor; the foundation of the steam pump was raised and the connections altered.

### WOODSTOCK.

#### PUBLIC BUILDING.

Some new tubes were put in heating furnace; the brickwork, plastering and painting were thoroughly repaired and some repairs were made to plumbing.

## PROVINCE OF QUEBEC.

### BERTHIERVILLE.

#### POST OFFICE.

The property Cadastral No. 182, fronting on Edouard Street, south-west of lot 152 and north-east of lot 183 with buildings thereon, was purchased (subject to ground rent) and altered to render it suitable for a post office. It is a wooden building, veneered with brick, consisting of a two storey main portion 32 feet by 29 feet, a kitchen wing 11 feet by 12 feet and a one storey wing for a public lobby 13 feet square.

### FRASERVILLE.

#### PUBLIC BUILDING.

The plumbing was repaired.

## HULL.

## PUBLIC BUILDING.

The woodwork of the building was repaired.

## GROSSE ISLE.

## QUARANTINE STATION.

Western Division.—At Dr. Church's residence the interior walls and ceilings were papered; storm sashes and doors were provided for all windows and entrances; a wood shed 24 feet by 18 feet by 15 feet was erected in the yard; inclosure fences and gates were provided for yard and paddock; the barrier fence was repaired and whitewashed, and some repairs made to glazing, plastering, &c.

The SS. "Challenge" was wired for electric lighting, and was cleaned and repainted.

Work superintended by Ph. Béland, clerk of works, Quebec, P.Q.

## LAPRAIRIE.

## POST OFFICE.

Repairs made to dormer windows, roof covering and water pipes.

## FARNHAM.

## POST OFFICE.

Springs were provided for entrance doors.

## JOLIETTE.

## PUBLIC BUILDING.

The woodwork of the interior was repainted; additions were made to the heating apparatus, and water service; springs were provided for the entrance door, and repairs were made to double windows, wainscot, ceiling, floors, roof and side-walks.

## MONTREAL.

## CUSTOM HOUSE.

New halyards and block were supplied for flag-staff; repairs were made to roof covering, gas pipes and water service; a part of the furnace smoke pipe was renewed and two water-closet cisterns supplied.

Work done under the supervision of C. Desjardins, clerk of works, Montreal.

## EXAMINING WAREHOUSE.

The floors of sections 6, 7, 8, 9 and 10 were relaid in maple on a concrete foundation. The circular stair in section 10 was renovated. The old hydraulic

## Department of Public Works.

press was taken up and the openings in floor and ceiling made good. A new partition was put up in the express office. The brick arches of sections 7, 8, 9 and 10, and the sides of elevator wells were repaired.

Work superintended by C. Desjardins, clerk of works at Montreal.

### INLAND REVENUE BUILDING.

A new floor was laid in the caretaker's kitchen in basement. On ground floor, caretaker's apartments, the ceilings were painted and the walls papered. In the two rooms devoted to the sale of stamps the walls and the ceilings were painted, the woodwork was varnished, and a desk, counter, cupboards, &c., supplied. Extensive changes were made to the arrangement of the partitions, furniture, fittings, plumbing, gas, &c., on first floor to suit altered requirements of officials.

Work done under the supervision of C. Desjardins, clerk of works at Montreal.

### POST OFFICE.

The freight hoist between basement and attic floor was changed to electric power and a room constructed to contain the motor. The front plate of the letter and newspaper drop was taken off and replaced by one of aluminum. A new counter was put in lobby for stamp vendor, and a new oak entrance door put in. On the first floor some new ventilators were put in windows; a new store-room made for stationery; a separate toilet and water-closet room fitted up for the ladies, and that for the men repaired. The cupboards, shelving, counters, &c., for British mail were enlarged and altered; repairs were made to the roof covering, plumbing, water and gas service, and minor general repairs effected.

Work done under the supervision of C. Desjardins, clerk of works at Montreal.

### MONTMAGNY.

#### POST OFFICE.

On 31st May 1898, the Government acquired the unexpired 99 years lease (dated 1892) of cadastral lots 222 and 223 from the municipality and purchased the town hall thereon from the Quebec Seminary. As a consideration for the conveyance of the lease the municipality is allowed the use of the town hall and offices, and for the building the Seminary received the sum of \$5,000. The building is of brick 80 feet by 40 feet, one storey of brick on a stone foundation and surmounted by a mansard storey. A building 20 feet by 40 feet adjoining the town hall, and similar in style of construction, for the accommodation of the post office, and a part of the town hall building is also to be devoted to this purpose.

Plans, &c., for alteration and addition prepared by this department.

Work superintended by Ph. Béland, clerk of works, Quebec.

### QUEBEC.

#### CITADEL, GOVERNOR GENERAL'S QUARTERS.

The flag-staff was renovated and repaired. The usual annual cleaning, painting and preparations for His Excellency's visit were carried out under the supervision of an officer of this department.



## CUSTOM HOUSE.

Carpets and furniture were supplied to the offices of the collector and inspector of inland revenue, the walls were papered and the woodwork painted.

Plans are being prepared for alteration of the heating apparatus.

Work inspected by Ph. Béland, clerk of works, Quebec, P.Q.

## EXAMINING WAREHOUSE.

Repairs and renewals were made to the painting, glazing, plumbing and carpentry.

Work inspected by Ph. Béland, clerk of works, Quebec, P.Q.

## MARINE AND IMMIGRATION AGENCY BUILDING.

The heating furnace being worn out, was replaced by two "Buffalo" furnaces; the heating mains in basement were altered and a large quantity of heating surface added, thus extending the apparatus.

Plans, &c., prepared by this department.

Work superintended by J. Cowan, of this department.

Contractor, Chas. Vezina, Quebec.

## OBSERVATORY.

The clapboarding of the north side was renewed; a new tar and gravel roof was put on; the dome, water tank, sashes and carpentry generally were repaired. A new bath was put in; some papering and painting was done and a foot-path from the building to the main road put down.

## POST OFFICE.

The woodwork of the inside and outside of the building was painted.

Work superintended by Ph. Béland, clerk of works, Quebec, P.Q.

## DRILL HALL.

The galvanized roof covering of drill hall and armouries was completely repaired.

Work superintended by Ph. Béland, clerk of works, Quebec, P.Q.

## RICHMOND.

## POST OFFICE.

Building completed and occupied.

Plans, &c., prepared by this department.

Clerk of works, N. Nicholson, Richmond, P.Q.

Contractors for building and fittings, Paquet & Godbout, St. Hyacinthe, P.Q.

Contractor for heating apparatus, J. Lamarche, Montreal.

## Department of Public Works

### RIMOUSKI.

#### POST OFFICE.

This building, which was previously described, is completed and occupied. Plans, &c., prepared by this department. Work superintended by J. P. M. Lecourt, Ottawa, and Ph. Béland, Quebec.

### SHERBROOKE.

#### PUBLIC BUILDING.

A postal bag-rack, gas fittings, fixtures and box locks were supplied; parts of heating apparatus were renewed and the roof covering and post office locks and lock boxes repaired.

### ST. HENRI.

#### POST OFFICE.

The glazing was repaired.

### ST. JEROME.

#### PUBLIC BUILDING.

The post office clock was repaired; sidewalks were repaired and renovated.

### ST. JOHNS, P.Q.

#### PUBLIC BUILDING.

Alterations of and additions to the post office fittings, giving increased facilities for public business, were carried out. New hot water furnaces were put in and some changes made in the hot water heating apparatus.

Plans, &c., prepared by this department.

### SOREL.

#### PUBLIC BUILDING.

The public lobby floor was relaid in hardwood and oiled; the plaster ceiling of the furnace room was renewed in galvanized iron. The plaster of walls, ceilings, cornices, &c., of ground floor was repaired, cleaned and kalsomined; the woodwork and floors painted, excepting the floor of the public lobby which was oiled. The water service pipes throughout were renewed; a special 3-inch fire service pipe, with hydrants and hose on each flat, was put in; the furnace, heating coils, gas pipes and fittings were repaired and bronzed.

Work superintended by P. E. Parent, C.E.

## THREE RIVERS.

## CUSTOM HOUSE.

New sidewalks and steps were laid along street line and to approaches; the hardwood floors were reoiled two coats; all walls and ceilings inside the building were cleaned and painted; the basins of second and third floors were renewed and vented; plaster of walls and ceilings as well as the roof covering was repaired.

Work done under the supervision of F. X. T. Berlinguet, resident engineer, Three Rivers.

## POST OFFICE.

New sidewalk of plank was laid along street line. The outside of walls and the woodwork of building were repainted or reoiled; the plastering was repaired and the ceilings kalsomined. A new urinal, ventilated, was put in first floor; a man-hole and ladder were provided in roof; the porch was lowered and repairs were made to the plumbing, locks, lock boxes, &c.

Work done under the supervision of F. X. T. Berlinguet, resident engineer, Three Rivers.

## PROVINCE OF ONTARIO.

## AMHERSTBURG.

## PUBLIC BUILDING.

A new 6-inch tile drain, 100 feet long, was carried from the building to sewer. The brickwork of furnace was altered, and a new flue built.

Work superintended by John Cowan, of this department.

## ALMONTE.

## PUBLIC BUILDING.

A door check spring was placed on entrance.

## ARNPRIOR.

## PUBLIC BUILDING.

The construction of this building, which was described in my last report, is in progress. Plans and specifications for a hot water heating apparatus and for post office fittings are prepared.

Plans, &c., prepared by this department.

Contractors, Messrs. Fortin & Fortin, Pembroke, Ont.

Clerk of works, H. Miranda, Arnprior, Ont.

## BARRIE.

## PUBLIC BUILDING.

Minor alterations and repairs were made to the heating system.

Work superintended by John Cowan, of the departmental staff, Ottawa.



## Department of Public Works

### BELLEVILLE.

#### PUBLIC BUILDING.

Lock boxes were repaired.

### BERLIN.

#### PUBLIC BUILDING.

Repairs were made to the water tank and letter receiver.

### BROCKVILLE.

#### PUBLIC BUILDING.

The floor and inside woodwork were painted; ladders for roof clearing and iron guards on hot water risers in post office lobby were supplied. Outside walls were painted and minor repairs made. The galvanized iron covering of deck roof was renewed and a quantity of floor oil cloth and carpet supplied.

### CHATHAM.

#### PUBLIC BUILDING.

Alterations were made to the brickwork and smoke pipe of furnace; some new cleaning doors made and some hose supplied.

### GALT.

#### PUBLIC BUILDING.

The brickwork of hot water heating furnace was altered; the walls and ceilings were kalsomined and the woodwork painted.

### GANANOQUE.

#### CUSTOM HOUSE.

Repairs were made to the heating furnace, under the supervision of J. Cowan, of this department.

### GUELPH.

The brickwork of hot water furnace was altered and a new sweep-door and a new damper provided.

Work done under the supervision of this department.

### HAMILTON.

#### PUBLIC BUILDING.

Repairs were made to the roofs of the main building and the examining warehouse as well as to the plastering of the customs offices. Alterations were made in the passage to some of the w.c.'s to render them private.

The external woodwork throughout the building, the rear stairs and floor of customs and urinal rooms were painted and halls, corridors, long rooms and offices of the customs and inland revenue departments were kalsomined. A new floor was laid in post office vestibule; a telephone cabinet was erected in post office. The plastering and cornices were repaired throughout. The caretaker's sink was renovated and altered, and foul air extract flues put in basement w.c.'s. New grate bars were supplied to furnace; new fittings, furniture and linoleum to several offices, and the yard and alleyway gravelled.

## INGERSOLL, ONT.

### PUBLIC BUILDING.

On 6th August, 1897, a site was acquired on the S.W. side of Thames street and N. of King street, being the corner of Thames and Charles streets, measuring 102 feet 2 in. by 60 feet, and plans are prepared for a building proposed to be erected thereon.

The building is to consist of a main building 56 feet by 38 feet, two storeys, basement and mansard with a tower 15 feet square on street corner, and a one storey annex in rear 26 feet by 29 feet. The outside walls are to be brick on a stone basement with wooden mansard. The basement of the main building is to be for furnace room, fuel room and stores; the ground floor main building is to be for the post office, and the annex for the weights and measures, examining warehouse and closets. The first floor is for customs and inland revenue, and the attic for caretaker's quarters.

Plans, &c., prepared by this department.

## KINGSTON.

### CUSTOM HOUSE.

A pair of new wooden gates for the yard; a new hot water boiler and bath, also a step-ladder were supplied.

A new hot water heating apparatus was put in, the original steam boiler, steam radiators, &c., being utilized in the new work.

Plans, &c., prepared by this department.

Work done under the supervision of Arthur Ellis, architect, Kingston, Ont.

Contractors for heating apparatus, Purdy, Mansell & Mashinter, Toronto, Ont.

### POST OFFICE.

The street letter boxes were painted.

Work superintended by Arthur Ellis, architect, Kingston, Ont.

### DRILL HALL.

Plans are being prepared for this building which is to be situated on Montreal street adjoining the public school grounds.

## Department of Public Works.

### LONDON.

#### CUSTOM HOUSE.

The plaster ceiling of the basement was renewed and replaced by a metal ceiling; the roadway was paved, and some minor repairs effected.

Work superintended by H. C. McBride, architect, London, Ont.

#### POST OFFICE.

Repairs were made to the newspaper bunks, post office stools and electric bells and some hose was supplied.

Work superintended by H. C. McBride, architect, London, Ont.

### LINDSAY.

#### PUBLIC BUILDING.

Repairs were made to roof covering, four window shades were supplied, and a railing placed in part of the general delivery wicket.

### NAPANEE.

#### PUBLIC BUILDING.

Some earth filling of ground and ballasting of foot-paths was done. The walls and ceilings of the caretaker's quarters were kalsomined and the woodwork of same painted. Repairs were made to the water service.

### PETROLIA.

#### PUBLIC BUILDING.

The water service of the building was connected with the town service.

### ORANGEVILLE.

#### PUBLIC BUILDING.

The post office door and screens were painted.

### OTTAWA.

#### CENTRAL EXPERIMENTAL FARM.

New floor boarding and fittings were put in the dairy building, and two closets for ladies' use fitted up there; a new floor was laid in the horse stable; alterations were made in the residence of Dr. Fletcher, including the removal of the w.c. and bath from front to rear of first floor. A large quantity of shelving for storage of books, reports, &c., was supplied; an addition was made to the carpenter's shop, additional fittings were supplied to the poultry house, the piggery was repaired and new tables were supplied to greenhouse.



Repairs were made to greenhouse. The residence of the horticulturist was cleaned, tinted, painted and papered.

A contract for the erection of a new laboratory building was entered into, and it is now in progress of construction. It is to measure 50 ft. 6 in. by 39 ft. 6 in., and to consist of a stone basement, divided by brick partitions into four rooms, as well as a stairway and entrance hall and w.c.; a ground floor of brick walls and partitions similarly divided, excepting the w.c.; and wooden attic containing three rooms. The basement is to have a granolithic floor and the remaining floors are to be wood.

Plans are prepared for a hot water heating apparatus.

Plans, &c., prepared and work superintended by this department.

Contractor, John J. Lyons, Ottawa.

#### EASTERN BLOCK—DEPARTMENTAL BUILDING.

The rooms of the Hon. the Secretary of State were cleaned and painted; the furniture recovered; blinds supplied as well as a steel filing cabinet. Pigeon cases were provided for the Privy Council and Auditor General; shelving for the Indian Department and Auditor General; double windows for the Privy Council and Auditor General; furniture for the Indian Department; new linoleum for the Auditor General, and a new w.c. was fitted up for the Indian Department. General repairs and cleaning were done to various offices.

The steam pipes in connection with the new boilers were covered with asbestos-magnesia pipe covering. New rubber hose was supplied for the outside hose cart and linen fire hose throughout building inside. Gas fitting was done and fixtures supplied to a number of rooms and offices of the Indian Affairs. Electric bell-hanging was done for Departments of Indian Affairs, Secretary of State and Justice.

Telephone wiring and repairs were done for the Secretary's office, Department of Indian Affairs, and for the Commissioner of Dominion Police. A new wash basin and new w.c., with ceiling ventilation, were placed in the attic for the use of the Department of Indian Affairs.

The entire building is being wired for electric lighting.

An electric triplex double action power pump, having a capacity of 750 gallons per minute, was connected to the 8-inch water service pipe and to the hydrant system of the building.

Contractors for electric pump and electric wiring, Messrs. Ahearn & Soper.

All the other work done by departmental staff.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

#### GEOLOGICAL MUSEUM.

The Baskerville building, adjoining the Museum, was leased for museum and office purposes, and was cleaned, repaired and fitted up with partitions, shelving, tables, trays, drawers, trestles, office furniture, stoves, &c. New doorways were made and a verandah added.

A new overflow waste was taken from attic tank to drain. The rented annex was piped for gas and furnished with fixtures and globes.

Work done by the departmental staff.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

## Department of Public Works.

### GOVERNMENT HOUSE.

At the Hall the porches and stairs to chapel and basement were removed and a new entrance hall, of wood, 30 ft. by 13 ft. and 12 ft. in height, was built. A doorway was broken through brick wall and fitted with double glazed doors; stairways were provided to chapel, to ground floor and to furnace room of chapel. The cut stone stair at private entrance was taken down, renovated and rebuilt. The felt and gravel roofs of studio and housekeeper's wing were renovated. The new roof of the conservatory and that of the new entrance hall were covered with galvanized iron and the roof of the glass verandah with shingles. A part of the greenhouse roof was renewed. New hardwood floors were laid in kitchen, scullery, pastry room, passage to larder and basement passage from kitchen steps to corridor. Flooring was renovated in servants' hall, still room, foot of basement stairs, stovehouse, greenhouse, pit and potting shed. New treads were put in basement stairs, back entrance stair and kitchen stair. The woodwork of greenhouses throughout was extensively renovated, and a large quantity of shelving, plant tables, staging, potting tables, &c., provided. The brick wall of the boiler room at greenhouse was rebuilt. The rain water down pipes at the front were taken down and replaced by new. The woodwork of sinks in pantry, still room and men's messroom was removed and new frames and tops put in, and various renewals of lining, flashing, connections and traps were made. Alterations were made to stovehouse heating, to water pipes fittings, &c., and new gas pipes were put in to new entrance hall and cloak rooms. The brick wall of greenhouse boiler-room was taken down and rebuilt, and repairs were made to brickwork of hearths, smokejack, furnace setting, conservatory walls, &c., and some of the stonework and roof flashings were pointed. Some minor renewals were made to the plastering. The galvanized iron roofs, flashings, and conductors were repaired. The glazing of greenhouses, vinery, &c., was largely renewed, and the putty of the greenhouse glazing renewed throughout. The verandahs, tennis court, principal stairs, shutters and all the greenhouses, conservatories, stovehouse and vinery were painted, the hardwood floors were oiled, and the major portion of the plastering distempered.

The movable cloak room usually put up in front of the house, for entertainments, was altered to suit erection at side of new entrance, and the ground was graded and trees cut down to make site suitable.

The hoist was strengthened and repaired; an inside porch to kitchen was built, trestles, waiter trays, refreshment tables, window screens, packing cases, step-ladders, &c., &c., were made from time to time; repairs were made to furniture; curtains and carpets and additions made to the kitchen utensils, crockery and glassware.

At the cottage a new kitchen sink and a new cistern were put in; a new floor was laid in kitchen and new tops put on kitchen table and sink table, and a part of the roof was resingled.

The roof of coal shed at stables, ice-house, laundry shed and lumber shed was resingled.

A stair of three flights with landings was built from the skating rink to the toboggan slide; a new toboggan track was put in and parts of the framing of the slide were renovated or repaired.

The old store building, between ice-house and stables, was demolished and a new store 36 feet by 26 feet by 16 feet high, in two storeys of wood, was constructed. The planking of Hall court yard was taken up and replaced by new.



The mouth of drain at Ottawa river was extended 190 yards to below low water mark and a pier built over the mouth for protection. Several choked drains were opened and cleaned and some repairs made to branch drains.

A new sidewalk and crossings were put in to replace a large quantity of old which had been taken up and the old sidewalk and crossing repaired. Some fencing was demolished and rebuilt, some gates were supplied and the greater part of the fences repaired, straightened and otherwise improved. Some of the fencing and gates were painted.

The grounds, gardens, lawns and plant houses were maintained efficiently by the contractors.

The usual periodical cleaning and the packing and unpacking were done; arrangements for and attendance on entertainments were furnished and the rinks, slides, &c., &c., kept in order.

Work carried out and maintained under the supervision of this department by the departmental staff.

Clerk of works, Wm. M. Hutchison.

Contractors for the maintenance of the grounds, lawns and conservatories, Sorley & Sims, Ottawa.

Contractor for the removal of snow, Thos. Whelan, Ottawa.

#### GOVERNMENT PRINTING BUREAU.

The roof covering was painted with cement paint; the stationery room and passages were cleaned, tinted and painted; partitions were put up in the stationery room and some new furniture and carpets supplied.

The piping of the water supply and the waste pipes of the front of the building being choked with rust and organic matter, moreover being too small, were taken out and replaced by others of larger size and galvanized. A large part of the steam heating coils had to be renewed. Three broken urinals were replaced by new ones and a quantity of new hose was provided.

Work done by the departmental staff.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

#### LANGEVIN BLOCK.

Plastered partitions on metallic lathing were provided for the Interior Department and the Agriculture Department, and glazed partitions for the Agriculture Department. The office of the Hon. the Postmaster General and that of his deputy were carpeted, curtained and furnished with chairs, desks, filing cabinets, &c. A large quantity of wooden shelving was put in for the Interior Department; some iron shelving covered with leather for the Archives Branch of the Agriculture, and some steel shelves in Post Office Department vault. The models of the Patent Branch of the Agriculture Department were removed to the Slater Block, Sparks street. A mail room was fitted up in the Agriculture Department with all the necessary letter boxes, cupboards, counter, pigeon-holes, &c. For the Interior Department various rooms were cleaned, tinted, painted; alterations were made to cupboards, shelving, bookcase, &c.; offices were fitted up and furnished, and a large number of double windows was provided.

A great many new wash basins were put in the Department of Interior, the Post Office Department and the Department of Agriculture, many new gas jets were put in the Department of Interior, the Post Office Department and the Department of Agriculture. The hot water heating coils on the attic floor were



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altered and added to suit the alteration in arrangement of the offices, and some changes and repairs made to furnaces and apparatus throughout. The freight elevator was overhauled. The basement was cleaned and kalsomined throughout; the furnaces, piping and elevator-plant were painted.

The entire building is being wired for electric lighting.

An electric triplex double action power pump, having a capacity of 750 gallons per minute, was connected to the 5-inch water service pipe and to the hydrant service of the building.

Contractors for pump and electric wiring, Messrs. Ahearn & Soper, Ottawa.

All the remaining works done by the departmental staff.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

### MAJOR'S HILL PARK.

Repairs were made to the greenhouse; the roadways and foot-paths were put in order, and the grounds were maintained efficiently by the contractor.

Contractor for maintenance of grounds, Thos. E. Davis.

### MILITIA STORE BUILDING, RIDEAU CANAL LOCKS.

A w.c. and a sink complete with all water and waste connections were put in for the caretaker.

Mechanical engineer, Wm. King.

### PARLIAMENT BUILDING.

Cleaning, tinting, painting and papering were done in the Speaker's apartments of both Houses as well as in the dining rooms, restaurant, passages, kitchen, bath rooms, w.c., &c., &c., of the Senate and the Commons side. A new stair was built to connect the Senate Speaker's ante-room with his dining room; new partitions were put up in the Commons Speaker's apartments; a new bath and w.c. were put in for the Speaker of the Commons; the desks and chairs of both chambers were cleaned and shellacked; some floors and passages were painted, carpets beaten, furniture and fittings repaired and some shelving supplied.

Alterations of, and additions to the steam heating surface were made in the apartments of the Speaker of the House, Black Rod and the Senate housekeeper. Gas fitting was done and fixtures supplied to several rooms; some electric lights were installed in the stationery vaults of the House of Commons, in the Senate Speaker's quarters and in the vaults of the Library. A bath and w.c. with necessary connections and drainage were put in the apartments of the Speaker of the House.

An electric triplex double action power pump, having a capacity of 750 gallons per minute with motor, &c., was connected to the 8-inch water service supply and to the system of hydrant pipes of the building. In addition to the existing hydrant system about 500 feet each of 4-inch and 3-inch pipe were put in; there are now 33 hose valve connections with hose racks, play pipes and about 2,900 feet of linen hose. For the outside of the building, two hose reels and 400 feet of rubber hose are provided.

The entire building is being wired for electric lighting.

Contractors for supply of pump and electric wiring, Messrs. Ahearn & Soper, Ottawa.

All other works done by departmental staff.  
Mechanical engineer, Wm. King.  
Clerk of works, F. Breton.

#### PARLIAMENT GROUNDS.

The summer house and lawn seats were painted, and greenhouse, lover's walk, roadways, summer house, lawn seats, &c., were repaired.

The eastern greenhouse building being unsuitable is to be removed and a new greenhouse built on the same site. The new building is to be 120 feet long by 24 feet wide, the side walls of brick on a stone foundation, the floor concrete, the roof framed in wood and having wooden tables on iron supports. In the construction of the hot water heating apparatus it is intended to utilize the material of the original apparatus so far as it will go.

The failure of the city water service to the buildings to meet the wants of the firemen during the destruction of the western block roof, resulted in the laying of a 12-inch special main from Sparks street through Metcalfe street to the north side of Wellington street where it divides into two branches of 8-inch going east and west, one branch entering the grounds east of the western block and passing up to the Parliament building, through which it passes joining the remaining branch which enters near the eastern gateway and reached the Parliament building after having passed around and to the eastward of the eastern block, forming a loop of 8-inch pipe from which 8-inch branches are taken off to the fire pumps in the Parliament building, the eastern and western block.

The Parliament building, eastern block, western block, and the Langevin block have each an electric triplex double action power pump with dynamo and a guaranteed capacity of 750 gallons per minute. The inlet is connected to the service pipe from the street and the discharge to the hydrant pipes of the building; that in the Langevin block being also connected to the discharge of the elevator system to the tanks in attic.

The snow was removed.

Contractor for the maintenance of the grounds, J. N. Grieves, Ottawa.

Contractor for the removal of snow, Anthony Butler, Ottawa.

#### REPAIRING STREETS, &c.

Limestone was quarried on the canal reserve, broken, spread on Wellington, Canal and Maria streets and covered with coal cinder. The space under Dufferin bridge between the roadway and pier was levelled up with earth. The rubbish brought from the western block was used to construct a road from St. Patrick street to the Nepean Point gate, and new crossings made on Maria and Canal streets.

Repairs were made to the coal shed and to the sidewalks and crossings of Wellington street, Cartier Square, St. Patrick street, and those at the museums. Scraping, cleaning and repairs were made to roadway of east and west Canal streets, those on both sides of locks, Nepean Point roadway, Wellington street, Bank street and Maria street. Rubbish and scrapings were removed from the east block, west block, the workshops, Printing Bureau, the museums, and the various streets to Nepean Point; the grass at the Geological Museum and Cartier Square was kept clipped and the ashes removed from the old pump house, the



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Langevin block, museums and Printing Bureau; the various roadways, sidewalks, foot-paths, roofs and yards were kept clear of snow during the winter.

Work done by the departmental staff.

C. Leblanc, foreman.

Contractors for the removal of snow, J. Shea and E. Murphy, Ottawa, Ont.

### WESTERN BLOCK—DEPARTMENTAL BUILDINGS.

The work of rebuilding the roof, referred to in my last report, has been carried on continuously, and some of the attic offices are expected to be ready for occupation by the close of this calendar year. As it was decided to restore the building to its original form, the original outlines are being strictly followed. All the materials, where possible, are to be non-inflammable, the framing of iron, the partitions and roof pugging of porous terra cotta, and the doors and frames copper-covered; the slopes of roof are covered with copper, and the flats with pitch and gravel.

A brick fire-proof vault was constructed for the Hon. the Minister of Public Works, and provided with steel shelving. Cleaning, tinting and painting were done to various rooms in Department of Railways and Canals, and in Department of Inland Revenue. New furniture and carpets were supplied to Inland Revenue, Customs, Marine, Trade and Commerce, Railways and Canals, and Public Works departments.

The electrical testing room of the Inland Revenue and Customs laboratory, were fitted up.

Gas fitting was done and fixtures furnished to a large number of rooms. Electric bell connections were made in several rooms. Steam radiators were put in some of the corridors and offices, and some of the coils were cut and altered. Wash basins and sinks were put in some of the offices, as well as sinks for the use of the charwomen.

The entire building is being wired for electric lighting. An electric triplex double acting power pump, having a capacity of 750 gallons per minute, was connected to the 8-inch water service supply, and to the hydrant system of the building.

Contractors for electric pumps and electric wiring, Messrs. Ahearn & Soper, Ottawa.

All other works done by departmental staff.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.

### SUPREME AND EXCHEQUER COURT BUILDING.

The rubber-lined fire hose throughout the building having become unserviceable, was replaced by an equal quantity of linen hose.

The building is being wired for electric light.

Owing to the weight of books in the attic, settlement of some of the walls took place, necessitating repairs to plastering, painting, &c.

Contractors for electric wiring, Messrs. Ahearn & Soper, Ottawa.

All the remaining work done by departmental staff.

Mechanical engineer, Wm. King.

Clerk of works, F. Breton.



## OTTAWA BUILDINGS AND GROUNDS GENERALLY.

In addition to the works mentioned in connection with the various buildings, the property of the Government, there are similar works of repair, painting, furnishing, tinting, &c., &c., in connection with a number of rented buildings, as well as works of a general character, such as the erection and taking down of porches, the winter boarding of outside steps, the moving of furniture, the putting up and taking down of summer blinds and winter sashes, the beating of carpets, minor repairs to glazing, painting, woodwork, furniture, &c., the supplying of packing cases of which over 800 were made for the various departments during the year, &c., &c.

## PORT ARTHUR.

## PUBLIC BUILDING.

Repairs were made to the roof and water tank.

## PORT HOPE.

## PUBLIC BUILDING.

A new furnace smoke pipe and some matting were supplied.

## PRESCOTT.

## POST OFFICE.

Minor repairs were made to the heating furnace under the supervision of J. Cowan, of this department.

## CUSTOM HOUSE.

A new smoke pipe was supplied to furnace.

## RAT PORTAGE.

## PUBLIC BUILDING.

On 10th April, 1894, lots 176 and 177 (Block No. 2) 100 feet square were acquired as a site, and on 4th July, 1898, a contract was entered into for the construction of the building.

The building is to be brick with stone dressings and on a stone basement. There is to be a main building 61 ft. 4 in. by 44 ft. 4 in. two storeys, basement and attic and an angle tower 15 feet square, also a one storey annex, 19 ft. 6 in. by 25 feet. The basement is to be for furnace room, fuel and stores, the ground floor for the post office and examining warehouse, the first floor (six offices) for the customs and inland revenue, and the attic—excepting one office in the tower—for caretaker's apartments. The walls are to be brick on a stone foundation with mansard attic covered with shingles and pitch and gravel.

There are to be separate brick vaults for the Post Office, Customs and Inland Revenue Departments; lavatories with w.c.'s, &c., on ground, first and attic floors.

Plans, &c., prepared by this department.

Contractor, Wm. Grierson.

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### ST. CATHARINES.

#### PUBLIC BUILDING.

The building was wired for 65 16 c.p. electric lights.

The brickwork of heating furnace was altered, new baffling plates provided, and some minor changes made in the heating apparatus.

Alterations were made to the gas fitting of the tobacco and petroleum testing machines, and new smoke flues provided for same.

Heating alterations superintended by J. Cowan, of this department.

### STRATHROY.

#### PUBLIC BUILDING.

A new force pump was supplied and connected to the water service.

### STRATFORD.

#### PUBLIC BUILDING.

A check spring was furnished for front door.

### ST. THOMAS.

#### PUBLIC BUILDING.

The hot water furnaces being worn out, were taken away and replaced by new Star hot water furnaces, and some changes were made in the piping of the heating apparatus. Some new stone and gravel walk was laid.

Heating repairs and renewals superintended by John Cowan, of the departmental staff, Ottawa.

### TORONTO.

#### CUSTOM HOUSE.

A check spring was put on the main entrance door; the basement water supply main was renewed; a new radiator was supplied the chief inspector's office, and some general minor repairs were made to the plumbing, heating, &c.

Repairs mainly by mechanical staff in charge of W. J. Smith, engineer.

#### EXAMINING WAREHOUSE.

The express department was rearranged, a new floor laid and new steam coils and wash basin put in, and some general repairs made and furniture supplied.

Work superintended by S. G. Curry, architect, Toronto.

#### INLAND REVENUE.

Extensive renewals of and additions to plumbing and drainage as well as general repairs to the building and heating boiler were effected.

Work superintended by S. G. Curry, architect, Toronto.

## POST OFFICE.

The one storey rear annex roof was temporarily covered with composition roofing; six new sorting cases were furnished the post office; a new counter put in the customs parcel office; the receptacles for parcels were enlarged and the street letter boxes were repainted.

Work superintended by S. G. Curry, architect, Toronto.

## WINDSOR.

## PUBLIC BUILDING.

A filter for the potable water was supplied.  
Repairs to locks, lock boxes, &c., were effected.

## PROVINCE OF MANITOBA.

## BRANDON.

## EXPERIMENTAL FARM.

A quantity of new fencing was put up; the woodwork of superintendent's house and boarding house was painted; plumbing was put in superintendent's house; drains were laid about the buildings; repairs were made to stables and usual and ordinary repairs to buildings and fences effected.

## PUBLIC BUILDING.

The eaves troughs and entrance gates were repaired and minor repairs done to the painting, glazing and carpentry in various parts of the building.

Work superintended by D. Smith, clerk of works, Winnipeg.

## DAUPHIN.

## IMMIGRANT SHED.

This building was constructed during April and May, 1898, on a site beside the railway siding, is a wooden two storey structure 60 ft. by 30 ft. on plan with a one storey annex in rear 20 ft. by 10 ft. for baggage and fuel. On the ground floor are the agents' offices, kitchen, men and women's dining rooms and the stairs; on the first floor are dormitories, wash rooms, store and stair. It is heated by stoves.

Plans prepared by this department.

Work done by days' work under the superintendence of D. Smith, clerk of works, Winnipeg, Man.

## ELKHORN.

## WASHAKADA INDIAN INDUSTRIAL SCHOOL.

This building, which is in course of construction by the Department of Indian Affairs, is being carried out from plans partly prepared by this department



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and under its supervision. It is to replace the Indian school at the same locality destroyed by fire 13th November, 1895. The site is on the Government property, one-quarter of a mile to the south-west of the town. The work is done by days' work, thus utilizing the labour of the institution. The heating and ventilation are being done by contract.

The building is of wood on a stone basement having two brick veneered storeys and a shingled mansard attic. The plan is cruciform and has a frontage of 113 feet by a depth of 79 feet, the main portion being 39 feet by 40 feet, the two side wings 34 feet by 37 feet each, and the rear wing 34 feet by 39 feet. The basement contains the laundry, boys and girls lavatories, baths and w.c.'s, two brick rain water tanks, the hot water heating and ventilating apparatus, hot air pumping engine, coal bins, &c., &c. On the ground floor are school rooms, teachers' rooms, dining room, kitchen, pantry, &c.; on the first floor are dormitories, teachers' bedrooms, baths and closets, &c., and on the attic floor dormitories, bedrooms and store rooms, &c. The boys dormitories, schoolroom, closets, baths and stairway occupy one wing throughout, and those of the girls the opposite one. The rooms are heated by hot water coils placed in the rooms. The schoolrooms, dormitories and w.c.'s are connected with a brick foul air extract shaft through which the smoke pipe of the furnaces passes. The fresh air supply is passed through hot water coil chambers in basement before admission to the schoolrooms and dormitories.

Plans, &c., prepared by this department, and work superintended by D. Smith, clerk of works, Winnipeg, Man.

Contractors for heating and ventilating plant, Plaxton Bros., Winnipeg.

### WINNIPEG.

#### FORT OSBORNE BARRACKS.

A sidewalk was laid in front of the drill hall and grounds on the south side of Broadway.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

### PORTAGE LA PRAIRIE.

#### NEW PUBLIC BUILDING.

This building which was described in previous reports is completed, fitted and occupied. When the basement of the building was completed the site was changed and the building was constructed ten feet broader than was originally planned.

Plan, &c., prepared by this department, and works supervised by D. Smith, clerk of works, Winnipeg, Man.

Local clerk of works, John Toye succeeded by John Duncan.

Contractors for building and fittings, Viau & Lachance, Hull, P.Q.

Contractors for heating apparatus, Purdy, Mansell & Mashinter, Toronto, Ont.

### WINNIPEG.

#### CUSTOM HOUSE.

Minor repairs were effected to electric bells, glazing, plumbing, &c., and some new grate bars for boiler as well as some rubber hose supplied.

Work superintended by D. Smith, Winnipeg, Man.

## CROWN TIMBER OFFICE.

The vault was fitted up with shelving, cupboards, &c.; a coal bin was put in the cellar; a hot water coil, burst by frost, was made good, the boiler repaired, and some minor repairs made to rain water conductors and glazing.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

## EXAMINING WAREHOUSE.

The sills and joists of rear portion having decayed had to be made good as well as some of the wall posts and floor.

The roof was resingled and reflashd.

The gas pipes were altered and extended. Repairs were made to doors, partitions, furnace, warehouse truck, &c.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

## IMMIGRATION HALL.

Four additional w.c.'s with necessary plumbing and woodwork were put in; some hose was supplied; part of the caretaker's apartments was whitewashed, and some repairs were made to lathing, plastering and a hot water heating coil.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

## POST OFFICE.

In the post office additional electric bells, blackboards and step-ladders were provided; some of the sashes were reglazed, and repairs were made to gas pipes, ironmongery, doors, lock boxes, &c.; a cement floor was put in boiler room and boiler repaired; in the post office inspector's office the floors were painted; the partition glazed with enamelled glass; window ventilators were put in and a quantity of furniture supplied as well as general minor repairs to woodwork and painting done; new glazed partitions were put in the Indian office; new cupboards in the dead letter office, and some furniture was supplied to the Department of Public Works office.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

## NORTH-WEST TERRITORIES.

## CALGARY.

## COURT HOUSE.

The entire site was inclosed and divided by board, picket and wire fences and gates; all the woodwork painted.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

## POST OFFICE.

The site was inclosed by board fences and gates, painted.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

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### IMMIGRATION SHED.

Eight closet boxes and new doors were put in and some sidewalk laid.

### EDMONTON.

#### IMMIGRATION SHED.

A brass lined hand pump was supplied.

### INDIAN HEAD.

#### EXPERIMENTAL FARM.

General repairs were effected to buildings, fences, &c.

### MOOSOMIN.

#### COURT HOUSE.

A well was sunk, a hand force pump, supply tank, hydrants, hose, &c., &c., for fire service provided; a new furnace smoke pipe, some ventilators for cells, new batteries for electric bells and some door bars were provided.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

### REGINA.

#### COURT HOUSE.

A fire protection apparatus (McRobie's patent) with all the necessary pipes and fittings was put up in and connected with the water supply of the building; some stationery cupboards for the judge and window screens were furnished, and general repairs were made to heating pipes, plumbing, windows and interior work generally.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

#### GOVERNMENT HOUSE.

A new flag-pole was provided and erected; general repairs were made to the plastering, plumbing, painting and woodwork, and the furniture reupholstered, repaired and varnished.

Work superintended by D. Smith, clerk of works, Winnipeg, Man.

#### POST OFFICE.

Repairs were made to pump, safe and locks, and some stove linings supplied under the supervision of D. Smith, clerk of works, Winnipeg, Man.



## BRITISH COLUMBIA.

## AGASSIZ.

## EXPERIMENTAL FARM.

An addition to bull shed was constructed, and general repairs were made to buildings, fences, &c.

## NANAIMO.

## POST OFFICE.

A urinal was put in the basement; a new storm porch was built inside the post office lobby; screens were put up in the custom-house to keep out the public, and a partition in the gas inspector's office was changed to increase the accommodation. The roof and the whole of the windows were repaired.

Work superintended by Wm. Henderson, clerk of works, Victoria, B.C.

## NEW WESTMINSTER.

## DRILL HALL.

The armouries were fitted up with gun racks; a counter and shelving were put up in the military clothing store; a detached one storey wooden building, connected with the hall by a passage, was constructed and fitted up for earth closets, and a urinal with water connection, from the supply of the building, was put in.

Work superintended by Wm. Henderson, clerk of works, Victoria, B.C.

## POST OFFICE.

All the external woodwork including shingling of roof, the internal walls of customs lobby and of land offices and the woodwork of inspector of customs and collector of customs offices, were painted, and the walls of the two last mentioned papered.

The walls and ceilings of the post office, customs offices, fisheries offices, and of the halls and lobbies were kalsomined. A wire screen was provided and fitted up in the money order office, and fittings and furniture were supplied to the inspector of customs office. Repairs were made to the tin deck roof, the wooden sidewalk and the cement surface drain about the building.

Work superintended by Wm. Henderson, clerk of works, Victoria, B.C.

## VANCOUVER.

## PUBLIC BUILDING.

New steps were put in at the post office entrances; fittings, furniture, &c., were supplied to postmaster, deputy postmaster, steamboat inspector and railway mail clerk. Ventilators were provided in windows of custom-house, and the posi-

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tion of the customs counter was altered. Repairs were made to drains, locks, hinges, hoist, glazing, plumbing, &c.

Work superintended by Wm. Henderson, clerk of works, Victoria, B.C.

### VICTORIA.

#### CUSTOM HOUSE.

The hearth and fire grates throughout have been relaid and reset, and a new flag-pole with halyards put up.

Work superintended by Wm. Henderson, clerk of works, Victoria, B.C.

#### NEW PUBLIC BUILDING.

This building is being fitted up for occupation.

An electric passenger hoist and an electric freight hoist—the latter for the mail bags—are being put in. A hot water heating apparatus is also in course of construction. A contract is entered into for a steel vault in the receiver general's branch. Granolithic pavements have been laid about the building on Government, Courtney, Humboldt and Wharf streets. The electric light has been installed throughout the building.

Plans and specifications prepared and work supervised by this department.

Until 1897 work supervised by F. C. Gamble, when he was succeeded by Wm. Henderson, Victoria, B.C., resident clerk of works.

Contractors for the building, Elford & Smith, Victoria, B.C.

- |    |   |
|----|---|
| do | post office fittings, Weiler Bros.                        |
| do | savings bank fittings, B. C. Furniture Co., Limited.      |
| do | savings bank deposit vault, J. & J. Taylor, Toronto, Ont. |
| do | hoists, John Fenson & Son, Toronto, Ont.                  |
| do | heating, Jos. Lamarche, Montreal, P.Q.                    |
| do | paving, B. C. Roofing and Paving Co., Victoria.           |
| do | light installation, Geo. C. Hunton & Co., Victoria.       |

#### POST OFFICE.

Minor repairs were made to plumbing, gas fitting and roof covering.

### WILLIAM'S HEAD.

#### QUARANTINE STATION.

Two additional brick chimney shafts were erected on the first-class passenger detention building, and the floors of the main hall and the dining room have been stained and varnished.

A lean-to addition was made to laundry building the entire length, divided into dressing rooms, &c., and the plumbing in the laundry building renewed throughout. An addition to the disinfecting house was also made. The drains and sewers throughout the station were repaired, overhauled and made good and serviceable. The portion between tide marks was renewed and encased in concrete. Electric wiring was installed throughout the building and wharf, the current to be supplied by the vessels in port. A 10-M. gall. filter was attached to the water service and a second telephone wire added to the line from Victoria to the station.

Work superintended by Wm. Henderson, clerk of works, Victoria, B.C.

## DOMINION BUILDINGS GENERALLY.

## FUEL.

Tenders were invited by public advertisement for the supply of coal to 151 of the public buildings, and coal and wood were supplied to over 200 buildings in all.

## LIGHTING.

The lighting of the various Dominion buildings is under the control of this branch of the department. Of these buildings 85 are lighted by gas, 65 by incandescent electric light, one by natural gas, and the remainder by coal oil. At several of the last mentioned, the entrance is illuminated by an arc light outside.

## WATER.

The water supply for the various public buildings, excepting the penitentiaries and military buildings, is controlled by this branch of the department; 125 buildings at 71 localities have water service connected with water supply of the local waterworks companies, the remainder being in general supplied by wells, pumps and tanks.

## ENGINEERS, FIREMEN, &amp;c.

The various engineers, firemen and caretakers of the buildings, 249 in number, including employees at Parliament and departmental buildings at Ottawa, and the heating apparatus of the Dominion public buildings, with the exception of that of the various penitentiaries and some military buildings, are under the control of this branch of the department.

## GENERALLY.

Repairs and alterations have been executed and sundry articles of furniture, &c., provided, and cleaning, painting and other improvements carried out in connection with a number of buildings, not herein reported.

D. EWART,  
*Chief Architect.*

Chief Architect's Office,  
Ottawa, 30th June, 1898.



Department of Public Works.

## PART IV

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# CHIEF ENGINEER'S REPORT

ON

HARBOUR AND RIVER WORKS, INCLUSIVE OF GRAVING  
DOCKS AND DREDGING OPERATIONS. ALSO ROADS,  
BRIDGES AND SURVEYS THROUGHOUT  
THE DOMINION.



Department of Public Works.

REPORT OF THE CHIEF ENGINEER

DEPARTMENT OF PUBLIC WORKS OF CANADA,

CHIEF ENGINEER'S OFFICE,

OTTAWA, 22nd December, 1898.

E. F. E. ROY, Esq., Secretary,

Department of Public Works.

SIR,—I have the honour to submit my report on the various works under my charge during the fiscal year ended 30th June, 1898.

These works comprise the construction and repair of wharfs, piers, breakwaters, dams, weirs, bank and beach protection works; the improvement of harbours and rivers by dredging; the construction, maintenance and operation of Government dredging plant; the construction and maintenance of graving docks; the construction, maintenance and working of slides and booms; the construction and maintenance of inter-provincial bridges and approaches thereto, and of bridges on highways of federal importance in the North-west Territories and the maintenance of military roads; also hydrographic and ordinary surveys and examinations, inclusive of precision levelling and geodetic measurements which are required for the preparation of plans, reports and estimates, the testing of cements, &c.

I have the honour to be, sir,

Your obedient servant,

LOUIS COSTE,

*Chief Engineer.*



# WHARFS, PIERS, BREAKWATERS, BANK AND BEACH PROTECTION WORKS, DAMS AND OTHER HARBOUR AND RIVER IMPROVEMENTS.

The following is a list of places by Provinces, where such works were carried on during the fiscal year 1897-98, showing the nature of the work done:—

## NOVA SCOTIA.

Places.	Counties.	Remarks.
Arisaig.....	Antigonish.....	Repairs to pier.
Avon River.....	Hants.....	Filling around pier road bridge at Windsor to prevent further scour.
Bayfield.....	Antigonish.....	Reconstruction of stone covering of breakwater.
Boularderie (Ross Ferry).....	Victoria.....	Road made from wharf to highway.
Broad Cove.....	Inverness.....	Repairs to wharf.
Cow Bay.....	Cape Breton.....	New outer work and heavy repairs to breakwater.
Cribbins Point.....	Antigonish.....	Repairs to pier.
Georgeville.....	".....	Wharf extension.
Grand Etang.....	Inverness.....	Repairs to stone slopes around pier.
Hantsport.....	Hants.....	Construction of new wharf.
Joggins.....	Cumberland.....	Repairs to breakwater (completion of).
Judique.....	Inverness.....	Construction of breakwater.
Kelly's Cove.....	Yarmouth.....	Reconstruction of top of breakwater wharf.
Little Narrows.....	Victoria.....	Part reconstruction of and repairs to pile-wharf.
Mabou.....	Inverness.....	Repairs to channel protection works.
Maitland.....	Hants.....	Construction of ferry wharf.
Margaretville.....	Annapolis.....	Reconstruction of part of pier.
McNair's Cove.....	Antigonish.....	Raising stone slopes of breakwater and reballasting cribwork.
Meteghan Cove.....	Digby.....	Construction of re-enforcing block of cribwork along breakwater.
Morden.....	Kings.....	Repairs to pier and clearing away gravel along the same.
North Wallace.....	Cumberland.....	Construction of pile ferry slip.
Ogilvie.....	Kings.....	Construction of re-enforcing block of cribwork alongside the breakwater-pier.
Oyster Pond.....	Guysboro'.....	Beach protection.
Porter's Lake.....	Halifax.....	Opening outlet of lake.
Port Hood.....	Inverness.....	Close-piling outer face of pier and other repairs.
Port Joli.....	Queens.....	Partial reconstruction of wharf with a view of extension.
Port L'Hébert.....	Queens and Shelburne.....	Removal of rocks from channel leading to wharf.
Port Lorne.....	Annapolis.....	Construction of re-enforcing block at outer end of breakwater and general repairs.
Port Maitland.....	Yarmouth.....	Extensive repairs to breakwaters.
Pubnico Head.....	".....	Repairs to wharf and construction of new head block.
Pugwash.....	Cumberland.....	Construction of new wharf.
Summerville.....	Hants.....	Repairs to wharf.
Three Fathom Harbour.....	Halifax.....	Repairs to beach protection works.
Trout Cove.....	Digby.....	Extension of breakwater pier.
Wallace.....	Cumberland.....	Construction of ferry wharf.
Whitewater.....	Kings.....	Construction of a new block and span wharf.
Windsor.....	Hants.....	Construction of a training weir of brush mattresses and cribwork.
Yarmouth Harbour.....	Yarmouth.....	Repairs to Stanwood beach protection works, including construction of new groyne.

# Department of Public Works.

## PRINCE EDWARD ISLAND.

Places.	Counties.	Remarks.
Annandale.....	Kings.....	Temporary repairs to pier.
Bay View.....	Queens.....	Repairs to roadway leading to pier.
Belfast (Halliday's Wharf). . . . .	".....	Addition of new block to pier head.
Brae.....	Prince.....	Extension of breakwater.
Higgins' Shore.....	".....	Raising outer portion of pier and general repairs.
Lewis Point.....	Kings.....	Renewals and repairs to pier.
Miminegash.....	Prince.....	Repairs to northern breakwater.
New London.....	Queens.....	General repairs to harbour works.
North Cardigan.....	Kings.....	Small repairs to pier.
Rustico.....	Queens.....	Repairs to breakwater.
Souris.....	Kings.....	Construction of new head block and other works for strengthening breakwater at Knight's Point.
Stephens' Pier.....	".....	Reconstruction of head block of pier, &c.
Tignish.....	Prince.....	Extension of breakwater-piers, brush-work, &c.
West Point.....	".....	Extension of pier and repairs.

## NEW BRUNSWICK.

Buctouche.....	Kent.....	Light repairs to quay.
Cape Tormentine.....	Westmoreland.....	Repairs to breakwater-pier.
Clifton.....	Gloucester.....	Renewals and repairs to breakwater.
Dalhousie.....	Restigouche.....	Repairs to ballast wharf.
Fort Dufferin.....	St. John.....	Extension of retaining wall at base of fort.
Herring Cove.....	Albert.....	Repairs to breakwater.
Mizzonette.....	Gloucester.....	Construction of new pier head of cribwork.
Partridge Island.....	St. John.....	Cribwork foundation for disinfecting house, boat slip, &c.
Quaco.....	".....	Repairs to angle fenders and sheathing of west pier.
River St. John and tributaries.....		Assistance given towards construction of wharfs.
		Boat channels opened through shoals and bars; dams built and repaired.
Shediac.....	Westmoreland.....	Repairs to angle plating of breakwater.
Shippegan.....	Gloucester.....	Extensive repairs to piers and dams.
		Construction of breast works and groynes and closing of false channels with stone work, &c.
St. John Harbour.....	St. John.....	Extension of break on breakwater at Negro Point, construction of groyne and protection of lighthouse with blocks of granite.
Stony Creek.....	Albert.....	Repairs to groyne built to deflect current.
Two Rivers.....	".....	Construction of wharf.
Tynemouth.....	St. John.....	Removal of shingle and gravel from entrance to harbour and small repairs to west pier.

## QUEBEC.

Anse à Beau Fils.....	Gaspé.....	Construction of a retaining wall.
Anse aux Gascons.....	Bonaventure.....	Construction of breakwater.
Baie St. Paul.....	Charlevoix.....	Reconstruction of part of approach and repairs to the shore end of the pier.
Beauport.....	Quebec.....	Extension of cribwork wharf.
Belœil.....	Verchères.....	Construction of cribwork guard wall.
Berthier (en haut).....	Berthier.....	Minor repairs to ice piers.
Berthier (en bas).....	Montmagny.....	Repairs to flooring of landing pier.
Bic.....	Rimouski.....	General repairs to covering of wharf.
Boucherville.....	Chambly.....	General repairs to landing pier.
Cacouna.....	Témiscouata.....	Extension of wharf.
Cap à l'Aigle.....	Charlevoix.....	Thorough repairs to wharf.



QUEBEC—*Concluded.*

Places.	Counties.	Remarks.
Cap Santé .....	Portneuf .....	Removal of boulders along foreshore of river.
Chicoutimi .....	Chicoutimi .....	Minor repairs to flooring, shed and waiting room.
Coteau du Lac .....	Soulanges .....	Repairs to flooring of wharf.
Coteau Landing .....	" .....	Thorough repairs to landing pier.
Gatineau River .....	Ottawa .....	Protection work on east bank.
Georgeville .....	Stanstead .....	Replanking of outer block.
Grand Pabos .....	Gaspé .....	Sheathing seaward face and raising outer end of work.
Isle aux Grues .....	Montmagny .....	Renewing part of flooring.
Isle Perrot .....	Vaudreuil .....	Construction of a landing on the north side.
Isle Verte .....	Témiscouata .....	Flooring of wharf entirely renewed.
Kamouraska .....	Kamouraska .....	General repairs to wharf.
Lake Megantic .....	Compton .....	Repairs to wharfs at Piopolis and at Lake Megantic village.
Lake St. John .....	Chicoutimi .....	Addition to wharf at Roberval. Freight shed at Mistassini. Construction of landing block at Rivière à la Pipe, and construction of a small landing at Ti-couabé.
Lanoraie .....	Berthier .....	Repairs to flooring.
Laprairie .....	Laprairie .....	Revetment wall of cribwork.
L'Islet .....	L'Islet .....	General repairs to wharf.
Longueuil .....	Chambly .....	Minor repairs to roadway.
Lotbinière .....	Lotbinière .....	Construction of isolated block.
Magog .....	Stanstead .....	Urgent repairs to flooring.
Matane .....	Rimouski .....	Sheathing outer end of pier.
Montmagny .....	Montmagny .....	Repairs to waiting-room.
Murray Bay .....	Charlevoix .....	Sheathing western side and front of west wing of pier.
Newport .....	Gaspé .....	Minor repairs to wharf.
Philipsburg .....	Missisquoi .....	Repairs to earth approach to wharf.
Port au Saumon .....	Charlevoix .....	Removal of part of a shoal of boulders.
Port Daniel .....	Bonaventure .....	Levelling up of shore end of pier.
Rimouski .....	Rimouski .....	Temporary repairs to the top of wharf.
Rivière du Lièvre .....	Ottawa .....	Reconstruction of retaining walls.
Rivière Ouelle .....	Kamouraska .....	Renewing sheathing and general repairs to wharf.
Rivière du Loup .....	Témiscouata .....	General repairs to foundation of railway track on wharf.
River St. Maurice .....	Trois-Rivières .....	Purchase of materials and placing of buoys.
Rivière du Sud .....	Montmagny .....	Repairs to retaining walls.
St. Anicet .....	Huntingdon .....	Addition of a wing to old wharf.
Ste. Anne de la Pocatière .....	Kamouraska .....	Renewing flooring.
Ste. Anne du Saguenay .....	Chicoutimi .....	Erecting platforms between piers.
Ste. Anne de Sorel .....	Richelieu .....	Construction of three new piers.
Ste. Agathe des Monts .....	Terrebonne .....	Improvements to channel of river.
Ste. Croix .....	Lotbinière .....	Removal of boulders.
Ste. Famille .....	Montmorency .....	Filling with cribwork spaces between cribs.
Ste. Irénée .....	Charlevoix .....	Extension to wharf.
St. Fulgence .....	Chicoutimi .....	Construction of isolated block.
St. Jean des Chaillons .....	Lotbinière .....	Improvement of channel close to the docks.
St. Jean (Isle d'Orléans) .....	Montmorency .....	General repairs to pier.
St. Valentin .....	St. Johns .....	Construction of a landing pier.



Department of Public Works

ONTARIO.

Places.	Counties.	Remarks.
Bayfield.....	Huron (South).....	Reconstruction and repairs to north pier.
Bowmanville.....	Durham (West).....	Pile protection and repairs to east pier.
Burlington Channel.....	Wentworth (South).....	Repairs to piers and automatic gates placed at bridge.
Cobourg.....	Northumberland.....	Repairs to west and east piers.
Collingwood.....	Simcoe (North).....	Repairs and dredging.
Goderich.....	Huron (West).....	Work of reconstruction on breakwater.
Hilton or Marksville.....	Algoma.....	Purchase of wharf.
Kincardine.....	Bruce (West).....	Reconstruction of superstructure of north pier and sheet piling.
L'Orignal.....	Prescott....	Reconstruction of earth and trestle approach.
Meaford.....	Grey (East).....	Pile protection work.
Owen Sound.....	" (North).....	Dredging.
Penetanguishene.....	Simcoe (East).....	Repairs to wharf.
Port Arthur.....	Algoma.....	Breakwater repaired.
Port Rowan.....	Norfolk.....	Repairs to landing pier.
Thornbury.....	Grey (East).....	Construction of breakwater.
Tobermory.....	Bruce (North).....	Booms repaired.
Tolsmaville.....	Algoma.....	Repairs to wharf.
Toronto.....	Toronto City.....	Repairs to breakwater, dredging and construction of groynes.

MANITOBA.

Wharfs on Lake Winnipeg.....	.....	Construction of new wharfs for the accommodation of the lake trade.
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BRITISH COLUMBIA.

Columbia River above Golden..	Yale District.....	Improvement of navigable channel.
Columbia River Narrows between Upper and Lower Arrow Lakes.....	Yale and Cariboo District.....	Improvement of narrows by dredging, &c.
Columbia River above Revelstoke.....	" "	Removal of rocks.
Duncan River.....	" "	Removal of snags and other obstructions.
Fraser River.....	" "	Improvement of Ship Channel, &c.
Nicomekel River.....	New Westminster District.....	Clearing navigable channel of snags, drift timber, sweepers, &c.
Okanagan River.....	Yale aud Cariboo District.....	Removal of overhanging trees, snags, &c. to improve stream for navigation by small steamers.
Skeena River.....	New Westminster District.....	Removal of points of rock, snags, &c., from navigable channel.
Stikine River Route to Yukon District via Glenora, Teslin Lake and the Rivers Lewes, Hootalinqua and Yukon.....	Cassiar and Yukon Districts...	Examination and improvement of streams, lakes, &c., for navigation purposes.
Williams Head Quarantine Station .....	Victoria District.....	New wharf. Repairs to wharf and improvement of water service.

## PROVINCE OF NOVA SCOTIA.

## ARISAIG.

Arisaig, Antigonish county, is on the Northumberland Strait, 15 miles to the eastward of Merigomish the nearest harbour.

The works at this place consist of a pier built by the Provincial Government prior to Confederation, the charge of which was assumed by the Federal Government in 1870; and a breakwater built in 1886-88.

The pier originally consisted of an approach 245 feet in length, and an outer portion 174 feet long varying in width from 40 to 44 feet. Repairs and improvements have been made from time to time, including the construction, during 1889-91, of an extension 100 feet in length. The depth at the outer end of the extension, at extreme low water, is 10 feet. Spring tides rise 5 feet.

The breakwater is now 300 feet in length and 20 feet in width on top, with an L at the outer end 40 feet in length. The depth at the outer end, at extreme low water, is 5 feet.

In 1896-97, the sum of \$1,239.38 was expended in repairing and strengthening the seaward face of the pier, and in constructing and placing the substructure of a block 24 by 24 feet on the seaward side to strengthen the face works and to secure and retain a proposed extension of the stone talus.

During the fiscal year 1897-98, the sum of \$648.70 was expended in making repairs to the pier, including the completion of the 24 by 24 feet block, the materials for which were procured and its substructure placed and ballasted in 1896-97, about 250 cubic yards of large stone were placed on the seaward side, the covering was repaired and some 20 cubic yards of ballast placed in face-chambers at the outer end of the breakwater.

## AVON RIVER.

This river rises in Avon Lake near the head-waters of the Chester, in Halifax county and runs N.N.E. through Hants county into Minas Basin. Total length about 30 miles. The town of Windsor is situated at the confluence of the Avon and St. Croix.

The Provincial Government of Nova Scotia having represented to the department that the currents set up by the training weir built by the Dominion Government in the Avon River at Windsor, in 1896-97, below the public road bridge over this river at the upper end of the town, had scoured out a hole along the first pier from the Falmouth side of the bridge; this hole was filled with stone in January and February, 1898, at an expense of \$328.58.

## BAYFIELD.

Bayfield, Antigonish county, is on the south shore of St. George's Bay, 8 miles east from Antigonish harbour, and 15 miles west from the entrance to the Straits of Canso. The harbour or roadstead is sheltered, by Pomquet Island, lying 1,900 feet to the eastward of Pomquet Point, and by outlying reefs, from all directions, excepting between north-east by north and west.

A breakwater 400 feet in length was constructed at Pomquet Point in 1879, and extended 310 feet in 1888. The work consisted of a crib core 18 feet in average width, covered with stone sloping on the seaward side three to one, and on the inner side one and one-half to one. It continued undisturbed until the occurrence of the great gale of 1st December, 1890, when the stone covering was stripped off nearly to high water level, to within 160 feet of the inner end.



## Department of Public Works.

During the years 1892-93, 1893-94 and 1895-96 the breakwater was repaired and extended. The work done included an extension 70 feet in length with an L or return at the outer end 40 feet in length.

During the fiscal year 1897-98 the sum of \$999.73 was expended in reconstructing the stone covering of the breakwater in places where it had been disturbed. About 4,000 superficial feet of surface was reconstructed with 263 cubic yards of large stone, 163 cubic yards of which was old stone displaced and 200 cubic yards of new stone brought one mile to the public wharf, thence by scow a quarter of a mile to the breakwater.

### BOULARDERIE (ROSS FERRY).

Ross Ferry Landing, Victoria county, is on the northern side of Boularderie Island, 13 miles to the westward of the principal entrance to the Great Bras d'Or Lake. The public wharf built in 1884-85, a mile and a quarter to the eastward of Ross Ferry Landing, having fallen out of repair, a new wharf was constructed in 1895-96 and 1896-97 about midway between the old wharf and the ferry landing.

During the fiscal year 1897-98 the sum of \$499.97 was expended in constructing a road from the wharf to the highway, a distance of about 320 feet; and \$25 in repairing and strengthening the corners of the wharf.

### BROAD COVE MARSH.

Broad Cove Marsh, Inverness county, is on the Gulf of St. Lawrence, 12 miles to the southward of Margaree Harbour.

A wharf, 400 feet in length, constructed in 1888, was seriously damaged in 1893 and 1894, being subsequently carried away to within 207 feet of the inner end. In 1894-95 the inner 207 feet was reconstructed and protected by close fendering.

The reconstructed work was examined on the 17th December, 1897, when it was found that ballast, for a length of 56 feet, had gone out of the face-chambers on the seaward side, through openings at the bottom.

During the months of December, 1897, and January, March and April, 1898, the sum of \$199.84 was expended in reballasting the empty face-chambers, raising the outer seaward corner one foot 6 inches and in renewing floor stringers and cap timbers.

### COW BAY.

Cow Bay, Cape Breton county, is on the eastern coast of Cape Breton Island, about 18 miles eastward of Sydney harbour. Extensive coal mines in the vicinity make it a place of considerable importance.

The bay is two and a half miles wide at the mouth and being open to the Atlantic from the east affords no safe anchorage during gales from that quarter.

Prior to 1867, with some aid from the Government of Nova Scotia, a breakwater was built on the north side of the bay by Messrs. Archibald & Co., proprietors of the Gowrie mines.

The breakwater is 1,386 feet in length and was originally about 44 feet in width and had a depth, at the outer end, at low water, of 17 feet. The area of the basin enclosed between it and the loading pier of the Gowrie mines is about 17 acres, 10 acres of which had originally a depth of from 9 to 17 feet at low water. Spring tides rise 5 feet.

In 1873, while repairs undertaken by the department were in progress the breakwater was seriously damaged by the great gale of the 24th of August. After the gale, operations were resumed, the balance of the amount appropriated being largely supplemented by Messrs. Archibald & Co.

In 1874, Messrs. Archibald & Co.'s interest in the breakwater was acquired by the Dominion Government, and a contract entered into in May, 1876, for repairing and strengthening it; the structure was completed in July, 1877.



Extensive repairs have been made nearly every year since 1877 and the work has been strengthened by the addition of counterforts, or outer face works, and by close piling.

The breakwater, prior to the gales of the 3rd and 8th February, 1895, consisted of an inner work extending from within 220 feet of the shore end to the outer end, and of counterforts with connecting outer face works, from within 580 feet of the shore end to within 56 feet of the outer end. The outer and inner works are about 22 feet apart and were connected by tie walls. The spaces between them were filled with earth and stone ballast.

During the gales referred to, a breach was made through the breakwater near the outer end and 140 feet of the outer face work (including 70 feet recently reconstructed) destroyed, and the work opposite to it was carried away, down to below low water; about 25 feet of the outer work between the two outer counterforts was also destroyed; ballast was washed out in several places and some close piling was carried away.

During the year 1895-96 the sum of \$3,999.87 was expended in urgent repairs and reconstruction; close piling and reballasting portions of the outer face works; placing concrete in face-chambers; reballasting, and renewing the covering of the two outer counterforts; slight repairs to the inner counterfort; renewing the covering of three tie walls between outer and inner face work and in cutting away loose timbers at the ends of the outer and inner face works next the breach.

In October, 1896, the outer portion, which withstood the gales of February, 1895, was carried away and the seaward face, from 1,128 feet from the inner end inwards, was badly damaged.

During the fiscal year 1897-98, \$9,988.40 of the amount appropriated (\$10,000) was expended in making urgent repairs on the breakwater.

The repairs effected include: placing concrete in face chambers and reballasting 105 feet of narrow outer work (201 to 306 feet from inner end); constructing new outer work 137 feet in length (445 to 582 feet from inner end) and 15 feet in width, with concrete in face-chambers and outer face close piled; reconstructing 64 feet of central work (462 to 526 feet from the inner end); slight repairs to the inner counterfort; placing concrete in face-chambers and reballasting 100 feet of outer works (600 to 700 feet from inner end); placing concrete in face chambers and reballasting and close piling the central block; finally, bulk heading and filling with concrete and ballast the outer ends of central and inner works at 1,128 feet from the inner end.

The amount available for the year 1898-99 will be applied in completing urgent repairs to the outer works, including the reconstruction of about 130 feet of outer face works between the two outer counterforts.

#### CRIBBIN'S POINT.

Cribbin's Point, Antigonish county, is on the west side of St. George's Bay, 8 miles to the southward of Cape George and five miles to the northward of the entrance to Antigonish harbour.

The wharf at this place, completed in 1891-92, extends 300 feet in a southerly direction from the point, and has an approach 195 feet in length. The wharf is 20 feet in width on top for a distance of 120 feet from the inner end and 30 feet for the remaining 180 feet; the inner 50 feet being of stone and the outer 250 feet of close-faced timber work fully ballasted. The depth at extreme low water, at the outer end of the wharf, originally 11 feet, is now about 9 feet. Spring tides rise 4 feet.

The face timbers having been weakened by the ravages of the "teredo," the sum of \$3,000 was voted for expenditure during 1896-97 to place a talus of stone on the seaward side and close pile the outer end with creosoted timber. Of the amount available \$1,552.44 was expended in quarrying and placing stone.

During the fiscal year a sum of \$1,446.96 was expended, viz.:—\$837.95 in September, 1897, in procuring 80 pieces of creosoted timber for close piling and \$609.02 in driving and securing 63 creosoted piles; continuing the placing of quarried stone on the seaward side and reballasting two empty face-chambers at the outer end.

## Department of Public Works.

### GEORGEVILLE.

Georgeville, Antigonish county, is on Northumberland Strait,  $6\frac{1}{2}$  miles south-west from Cape George.

The wharf at this place, as completed in 1891-92, extended 207 feet. to the line of 5 ft. 6 in. depth at extreme low water. It is 20 feet in width on top, with an L 20 by 20 ft. ; making the width at the outer end 40 feet. The approach, 87 feet in length, is of stone and the remainder of the work of squared timber, close-faced, fully ballasted and protected by sheathing and fenders.

The sum of \$1,800 was made available for expenditure during 1896-97 to construct an extension 44 feet in length with an L 20 by 24 feet. Active operations were commenced on the 7th of June and were in progress at the close of the fiscal year when the substructure of the extension was constructed and made ready for launching, with the exception of placing fenders and sheathing. The expenditure amounted to \$773.84.

During the year 1897-98, the extension was completed and slight repairs to the old work were effected, the total expenditure amounting to \$1,782.

The depth at extreme low water at the outer face of the extension is 6 feet 6 inches.

### GRAND ETANG.

Grand Etang, Inverness county, is on the Gulf of St. Lawrence, about midway between the harbours of Margaree and Cheticamp.

Works designed to improve the entrance to the pond and make it available for the use and shelter of fishing boats and small vessels, commenced in 1893-94, were completed the following year, with the exception of the excavation to low water between the piers and the removal of a bridge and abutments.

In 1895-96, a pile bridge was constructed within the pond ; the superstructure and one of the abutments of the old bridge were removed and part of the channel was excavated to one foot below extreme low water ; the following year the channel was deepened from end to end to 1 ft. 3 in. at extreme low water, or to 4 ft. 6 in. at extreme high water.

During the year 1897-98 the sum of \$100 was applied in repairing the stone slope at the back of the pier on the west side of the channel, including the placing of 55 cubic yards of stone in the slope and 12 cubic yards of covering stone.

### HANTSPORT.

Hantsport, Hants county, a prosperous village of about 1,500 people, is situated on the left or west bank of the Avon River, here a mile and three-quarters wide, about half way between Windsor, the county town, and the mouth of the river, where it enters the Basin of Minas. It is also an important station on the Dominion Atlantic railway, seven miles north-west from Windsor, and fifty-three from Halifax. The chief business of the place has been, in the past, the building, repairing and owning of large wooden sailing vessels. Although this has somewhat declined in late years, it is still of considerable importance, there being nearly 25,000 tons of shipping owned in the place. For eight months of the year a steamer runs to St. John, N.B., and intermediate ports ; another small steamer runs to Windsor and other ports on the river. There being no public wharf in the place, the department decided to build, and a contract was awarded to Messrs. Simmons & Burpee, of Fredericton, on the 16th June, 1897, for the construction for the sum of \$5,947. According to contract the work was to have been finished at the end of the fiscal year 1897-98, but, owing to unforeseen difficulties in procuring materials this could not be accomplished. It is a substantial structure of stone filled cribwork, about 200 feet long, 32 feet wide, with an outer face 64 feet long ; at the outer end it is 26 feet high. At high water there is a depth of 23 feet along the outer face. The tides rise nearly 40 feet so that at low water there is no water near



the wharf. At the close of the year 1897-98 the total expenditure was \$2,784.50 and the work was not expected to be completed before the 1st of October, 1898.

#### JOGGINS.

"The Joggins," Cumberland county, is a small settlement of some three to four hundred people, situated on the south-east side of Chignecto channel, the northern arm of the Bay of Fundy. It is about ten miles from the head of Cumberland Basin, and fourteen miles from Maccan station on the I. C. railway with which it is connected by the Joggins Railway built in 1889. About a mile to the east is situated the colliery of the Joggins Railway & Coal Company; the coal being brought down to the loading pier by means of a wire rope tramway. A breakwater, which protects the company's loading pier, was built over twenty years ago by the Joggins Coal company. In the year 1875 the department extended the head of the breakwater a distance of 120 feet; making its present total length 280 feet. In 1890 and 1891 it was repaired by the department at a cost of \$2,200 and \$1,000 respectively. In the year 1896-97 the sum of \$1,500 was expended in extensive repairs and renewals, and during the year 1897-98 the sum of \$399.28 was expended in completing the repairs. The floor, with stringers and guard timbers, was renewed for a length of 207 feet, 40 feet in length of the outer end was close sheathed and four new mooring posts were placed in position. This breakwater is now in excellent condition.

#### JUDIQUE.

Judique, Inverness county, is on the east side of St. George's Bay, 10 miles south from Port Hood and 16 miles north from the entrance to the Strait of Canso.

A contract was entered into in April, 1898, for the construction of a breakwater at McKay's Point, near the entrance to Judique Pond, for the sum of \$14,143. The work under contract is to be 725 feet in length and 20 feet in width on top, with an L at the outer end, 20 feet long of open faced cribwork fully ballasted, close fendered at the outer end and protected on the north side by a talus of stone; the substructure to be of creosoted North Carolina or Virginia short leaf pine, and the superstructure of native timber. The depth at the outer end at extreme low water will be 6 feet 3 inches. Spring tides rise 4 feet 6 inches.

Up to the close of the year the contractors were engaged in procuring materials and in preparing for construction.

Total expenditure in 1897-98, \$181.

#### KELLY'S COVE.

About two and one half miles south of the centre of the present town of Yarmouth lies Kelly's Cove. Fifty to a hundred years ago Kelly's Cove was the harbour of the place and round its shores was all that constituted the town. At the present date it is merely a shelter for about a dozen fishing boats and there are but few houses in its immediate vicinity.

Spring tides rise 16 feet and neaps 13 feet.

The present wharf, which is the only one left, was built before Confederation by the Provincial Government; the structure is old and a good deal decayed though the bottom timbers are still fairly good. It is 97 feet long, 23½ feet wide, and 15½ feet high at the outer end, where at high water of ordinary spring tides there is about 12 feet of water. The work is of ordinary round log, stone filled cribwork and not floored. Immediately to the south-west of the wharf stands a piece of cribwork, built to protect the beach, 118 feet long, 4 feet high and about 8 feet wide and of which the 30 feet next to the wharf has been destroyed by the waves.

During the year ended 30th June, 1898, the sum of \$299.72 was expended in partially rebuilding the top of the breakwater-wharf and the renewal and repair of 100



## Department of Public Works.

feet in length of the beach protection work adjoining the wharf. This wharf is but little used and is of minor importance.

### LITTLE NARROWS.

Little Narrows, Victoria county, is a contraction of the St. Patrick's channel of the Great Bras d'Or Lake at a point seven miles to the eastward of the village of Whycocomagh.

The public wharf was built in 1897-98 on the south side of the narrows ; it consists of a shore block  $47\frac{1}{2}$  feet in length, 20 feet in width, and a pile extension 82 feet in length with a return 40 feet by 20 feet at the outer end where a depth of 14 feet is available. The level of the lake is nearly constant.

The wharf is used by one of the steamers of the Bras d'Or Steam Navigation company plying between Little Bras d'Or, Baddeck and Whycocomagh, and is a place of shipment for cattle and farm produce.

In August and September, 1897, a sum of \$499.65 was applied in partly reconstructing and repairing the pile wharf and in renewing the piles of three out of five bents of the approach and repairing the covering of the same.

### MABOU.

Mabou Harbour, Inverness county, is on the west coast of Cape Breton Island, six miles north-east from Port Hood.

The entrance was formerly at the southern extremity of a range of sand hills and by an intricate channel obstructed by a bar, over which there was a depth of only 4 feet at low water.

In 1870 a survey was made and a report submitted on the project of opening a channel through the sand-hills at their northern extremity.

The work was commenced in 1872. A pier on the south side of the new channel was completed in 1876, and the same year the old channel was closed. Expenditures were made nearly every year from 1876 to 1894, in repairs to the pier, the construction of brush and stone works on the south side and of protection works on the north side of the channel and in dredging.

During the year 1897-98 the sum of \$1,999.96, was expended in repairing the protection works on the north side and in raising the brush and stone work on the south side of the channel.

The minimum depth at extreme low water in the new channel is 8 feet 3 inches. Spring tides rise 4 feet.

### MAITLAND.

The village of Maitland, Hants county, with a population of about 1,500 is situated on the west side of the mouth of the Shubenacadie River, which enters Cobequid Bay at the south side. The Bay is the eastern extension of the Basin of Minas, a large and important estuary of the Bay of Fundy. A public wharf was built by the department between 1873 and 1876 at a cost of \$6,342. Communication with Truro, the county town of Colchester county, is by public road, but the Shubenacadie River, at this point over half a mile wide, must first be crossed by means of a ferry available the year round except for the few winter months. On the Hants county side the ferry boat has always landed on the beach and, at low water, considerable trouble is experienced in getting passengers and teams to and from the ferry boat.

To facilitate the crossing of the river the department expended during the year 1897-98 the sum of \$996.76 in constructing a ferry wharf of cribwork, 170 feet long and 20 feet wide. The work is partially an extension and reconstruction of an old private wharf but its location at the foot of a public street makes it entirely a public work.

## MARGARETVILLE.

Margaretville, Annapolis county, is the largest and most important village on the south coast of the Bay of Fundy from Digby Gut to Scott's Bay. It is 42 miles from the former, 36 from the latter, and 8 miles north from Middleton, which is an important station and junction of the Dominion Atlantic railway. The village has a population of about 500 people engaged in fishing, farming and to a small extent in lumbering operations and general trade. In March, 1897, the department awarded a contract for the reconstruction of the outer 185 feet in length of the work that was totally destroyed by gales in October, 1890 and March, 1894. Amount of contract, \$10,854. During the year ended 30th June, 1898, the work was completed, the total expenditure amounting to \$6,474.20. The new block is 185 feet long, 42 feet wide and from 22 to 32 feet high. It is well and substantially built of stone filled cribwork of the usual type. The pier has now a total length of 425 feet and reaches a depth of 28 feet at high water ordinary spring tides, which rise about 30 feet.

The work being high and dry at low water for most of its length, it receives very little injury by worms but its exposed position on a straight open coast subjects it to the onslaught of heavy seas from N.W. to N.E.

## MCNAIR'S COVE.

McNair's Cove, Antigonish county, is on the west side of St. George's Bay, two miles south of Cape George.

A breakwater, 400 feet in length was built on the north side of the cove in 1872-73. Repairs were effected from time to time up to 1887-88, when the work was constructed over a distance of 160 feet from the outer end. During the years 1890-94 the outer end of the work reconstructed in 1887-88, was protected by close piling with creosoted timber, and its seaward face by a talus of quarried stone. In 1896-97 a small amount was expended in raising the talus that had settled.

During the year 1897-98, the sum of \$499.80 was expended in raising the talus on the seaward side of the work reconstructed in 1887-88, which had again settled in places, and in reballasting face-chambers on the seaward side where the ballast had gone out through damaged face-works; and \$199.56 in procuring materials to be used in repairing the seaward face of the work reconstructed in 1887-88.

The depth at extreme low water along the inner face of the work reconstructed in 1887-88 varies from 13 feet at its outer to 7 feet at its inner end. Spring tides rise 4 feet.

## METEGHAN COVE.

Meteghan Cove, Digby county, is situated on the south-east side of St. Mary's Bay, 25 miles north of Yarmouth, 20 miles south of Weymouth, 3 miles from Meteghan River and 40 miles from Digby, the county town. The nearest railway station on the Dominion Atlantic railway, which runs approximately parallel to the coast and has its terminus at Yarmouth, is about seven miles distant. Ordinary springs rise about 21 feet and neaps 18 feet. The whole coast of St. Mary's Bay from Digby to Yarmouth is thickly settled and is, in fact, almost one continuous straggling village the distance of 65 miles. Meteghan, next to Digby and Weymouth, is the largest and most important settlement on the Bay shore, having a population of about 1,000 people engaged in farming, fishing, lumbering and general trade. The works at this place consist of a breakwater and a landing pier, both of cribwork, built from 40 to 50 years ago by the Provincial Government and the inhabitants. The pier is about 300 feet long by 20 feet wide, the breakwater 20 to 26 feet wide runs out for a distance of 925 feet from the shore and has a return of 85 feet at the outer end, which is 24 feet wide and 30 feet high; standing in from 20 to 21 feet depth at low water ordinary spring tides.

Since 1875, at which date the harbour works appear to have been taken over by the department, they have been many times extended and repaired. The total expenditure by the department since Confederation is \$23,313.



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During the year the sum of \$3,141.99 was expended in constructing a re-enforcing block along the whole length of the outer face of the ell of the main breakwater. This work which was rendered necessary by the eating away of the bottom timbers by the "limnoria" and the consequent settlement of the breakwater is 100 feet long, 12 feet wide and 22 feet high. The upper portion of the ell was also rebuilt 35 feet wide and 4 feet high, which restored it to the height of the main work. The new work is thoroughly well and substantially built of round log cribwork, well fendered, ballasted and close sheathed on all exterior faces.

The lower portion of the seaward face of the main breakwater to a height of some 12 feet above low water spring tides has been damaged by the "limnoria." Within the next few years expenditures of several thousand dollars will be required if this important work is to be preserved. Along the inner face of the main breakwater where vessels lie to load timber, deals, piling, &c., there is a depth of water, at high water spring tides, of 12 to 16 feet.

### MORDEN.

Morden or French Cross, Kings county, population 120, is situated on the south shore of the Bay of Fundy, 50 miles east of Digby Gut and 9 miles north of Aylesford station on the Dominion Atlantic railway. Spring tides rise 33 feet, neaps 25 feet.

The breakwater-pier at this place was begun in 1846 at the joint expense of the inhabitants and the Provincial Government. It is built of round log cribwork filled with ballast and close sheathed on the seaward side and end. The work is 365 feet in length and varies in width at top, from 28 feet at shore end to 45 feet at outer end where it is 26 feet in height. From 1st July, 1867, to 30th June, 1897, the department expended upon this pier a sum of \$8,583.45, of which \$5,560.06 was for works of construction and \$3,023.39 for renewals and repairs.

During the year 1897-98 the sum of \$1,992.75 was applied as follows: (a) Completing the work, commenced in 1896-97, of closing a gap 121 feet long that was made through the middle of the pier in February and October, 1895, by violent gales. (b) Completing some minor repairs to the other portions of the work. (c) Removing, by hand digging, some of the gravel on the eastern side of the work which at present obstructs vessels seeking a berth alongside.

### NORTH WALLACE.

North Wallace, Cumberland county, situated on the north side of Wallace harbour, directly opposite the village of Wallace proper, does an extensive farming business. A public wharf was built by the department between 1888 and 1890 at a cost of \$3,577.79. The length of the wharf is now 345 feet, of which the outer 180 feet, being along the edge of the dredged channel, can be used by small craft for shipping. During the year 1897-98 the sum of \$265.88 was expended towards constructing a pile ferry slip on the west or upper side of the wharf. Owing to unforeseen difficulties in procuring materials the work could not be finished previous to the close of the fiscal year; at that date, however, all materials had been purchased and arrangements made for pushing the work to completion.

### OGILVIE.

Ogilvie's Pier, Kings county, is 55 miles east of Digby Gut, between Victoria and Harbourville, and 11 miles north of Aylesford station on the Dominion Atlantic Railway.

About 1854 a pier which serves as a breakwater was built here, in a northwesterly direction from the Bay of Fundy shore, at the joint expense of the inhabitants and the Provincial Government. It is 270 feet long, about 35 feet wide on an average, and about 27 feet high at the outer end which is dry at low water. Springs rise 39 feet and neaps 33 feet.



No repairs were made to the original structure which became decayed and worm eaten in a number of places. Hence the pier had to be frequently strengthened and repaired by the department; the expenditure up to 30th June, 1897, for works of repair, renewal, &c., amounting to \$4,251.63.

During this fiscal year the sum of \$1,537.39 was spent in constructing a re-enforcing block on the eastern side of the breakwater which was leaning over and threatening to fall into the dock. The new block or buttress, 153 feet long, 10 feet wide and the full height of the work has been well and substantially built of stone filled crib-work and the breakwater is now in fairly good condition.

#### OYSTER POND.

Oyster Pond, Guysboro' county, is one of several large ponds on the north shore of Chedabucto Bay which form the only boat harbours between Cape Argos on the western side of the southern entrance to the Strait of Canso and Guysboro' harbour, a distance of 15 miles.

In 1876, the entrance to the pond was improved by hand dredging and protected by the construction, on its eastern side, of a breakwater 180 feet in length; in 1883-84 the breakwater was extended 105 feet over a level bottom, dry at low water. The width of the inner work is 14 and of the extension 16 feet. In 1896-97 the breakwater was repaired and strengthened.

A contract for the sum of \$1,846 was entered into in February for the construction of a beach protection work on the west side of the entrance; operations were commenced in June and were in progress at the end of that month, when the estimated value of works performed was \$930.25 and the total expenditure incurred \$990.25.

#### PORTER'S LAKE.

Porter's Lake is a long and narrow sheet of water lying nearly north and south and situated about the middle of Halifax county, or about 15 miles east of the city of Halifax. It is about 17 miles in length, from a quarter to half a mile in width, and is navigable for moderate sized vessels to its extreme head.

When in its normal state the lake stands at a nearly constant level of a few inches above high water of ordinary neap tides, and discharges directly into the Atlantic through a beach of gravel and sand from one to two hundred feet wide.

Since 1880 the outlet of the lake has several times been so completely blocked up by sand and gravel that the water level rose one to two feet, causing the flooding of its shores, of the public road, the washing out of numerous culverts and small bridges as well as some damage to the crops on the adjacent low lying lands.

Between 1880 and 1897 the department expended on three or four occasions small sums in opening the outlet by hand dredging, and in 1897-98 a sum of \$100 was applied in doing similar work to afford slight temporary relief to the sufferers from the flooding of the lake shores.

#### PORT HOOD.

Port Hood, the shire town of the county of Inverness is on the west coast of Cape Breton Island, 20 miles north of the northern entrance to the Strait of Canso.

The harbour was formerly a secure one, Smith's Island, which is two miles in length and forms its western side, having been connected with the mainland by a range of sand-hills. In 1839 the sea made a breach through this protection. The opening, at first narrow, was enlarged by the tidal currents with increasing rapidity until it was swept entirely away and its site occupied by 15 feet of water. The harbour is now unsafe during northerly gales except in a small cove on the east side of Smith's Island.

The pier, which is on the eastern side of the harbour, was commenced by the Provincial Government in 1865-66. It was originally 550 feet in length and 24 feet in

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width, with an L at the outer end 100 feet in length and 25 feet in width. It came under the charge of the Federal Government in 1871, since which time extensive repairs and renewals have been made, including the construction of a new block, 125 feet by 25 feet at the outer end, in 1873; the placing of slopes of heavy stones on each side in 1883-84, the construction of a block 50 by 22 feet at the south end of the L in 1888-89, and the construction of a block 71 feet by 24 feet at the outer end in 1889-90.

During the year 1897-98 the sum of \$400 was expended in close piling 123 feet of outer face over existing close piling, in slight repairs to covering and in replacing a small quantity of ballast, and \$40 in urgent repairs to the covering of the outer end of the work.

### PORT JOLI.

Port Joli is a harbour six miles long, north and south, by a mile wide, situate in the southern corner of Queens county. Near its head is a scattered settlement with a population of about 250 people engaged chiefly in farming and lumbering. Nearly thirty years ago the Provincial Government built a little wharf consisting of three isolated blocks of poorly built cribwork from 15 to 20 feet square and about 8 feet high. They were about 200 feet from high water mark and were of very little use. During the year 1897-98 the department expended \$300 in rebuilding these three blocks with a view to the subsequent extension of the wharf to the shore. At the face of the outer block at high water there is about 9 feet of water. Spring tides rise about 7 feet.

### PORT L'HÉBERT.

Port L'Hébert is a harbour 6 miles long north-west and south-east by about half a mile wide. It is situate on the south-east coast of Nova Scotia on the dividing line between the counties of Queens and Shelburne. At its extreme head on the Queens county side is a small private wharf, about 500 feet long, of poorly built pile and cribwork combined. From this wharf is shipped the output of two saw-mills, situated within a mile, owned by private parties. The shipments aggregate about a million feet per annum. At the head of the wharf is a depth of about 16 feet at low water spring tides, but the channel leading to it being narrow, crooked and obstructed by rocks, vessels have some difficulty in approaching it. During the year the department expended the sum of \$500 in removing some of the worst rocks from the channel. The work was done by means of the steam wrecking barge, the "Aid," owned by private parties in Liverpool.

### PORT LORNE.

Port Lorne is a settlement of about 300 people, situated on the Bay of Fundy coast, Annapolis county, 32 miles from Digby Gut and 6 miles north-west from Paradise station on the Dominion Atlantic railway. A breakwater was begun in 1835 at the joint expense of the inhabitants and the Provincial Government. In 1873 and 1874 the department spent \$3,500 in extending it; in 1879-80 the sum of \$745.76 in repairs; in 1882-83 the work was again extended at a cost of nearly \$5,000, and it has since been several times repaired. The breakwater-pier proper has now a total length of about 310 feet and is 36 feet wide and 25 feet high at the outer end. In order to divert the brook, which during freshets tore away the loading berths for vessels on the eastern side of the pier and threatened to undermine and destroy the breakwater proper, a training pier of cribwork 110 feet long by  $10\frac{1}{2}$  feet wide and about 16 feet high, has been built about 150 feet to the eastward. During the year the sum of \$2,999.87 was expended in constructing a re-enforcing block, on the seaward side of the outer end of the breakwater, 178 feet long, 27 feet high and 13 feet wide. The top of the outer block was also rebuilt, levelled up and connected at the same level with the new block. The rest of the seaward face to the end of the work, as well as the end of the work itself, was close sheathed. The end break, 4 feet high, was renewed, and new cap timbers



and mooring posts provided. The shoreward half of the structure was refloored and other miscellaneous repairs were done. This breakwater is now in first-rate condition.

#### PORT MAITLAND.

Port Maitland, Yarmouth county, is a prosperous and important fishing and farming village, with a population of about 400, situated on the south-east side of the mouth of Bay of Fundy, 12 miles north of the county town of Yarmouth.

Spring tides rise 18 feet and neaps 13 feet.

The harbour works were begun about the year 1859, by the Provincial Government, they consist of an eastern and a western or main breakwater of cribwork. The former is 400 feet long and some 20 feet wide, and the latter is 500 feet long, 22 to 25 feet wide, and has a return 54 feet long, 24 feet wide and 27 feet high along which there is a depth of 19 feet at high water ordinary spring tide; these breakwaters or piers enclose between them a snug high water harbour of  $2\frac{1}{4}$  acres in extent.

During the year the sum of \$3,600 was expended in making important repairs and renewals to both the main or western breakwater and the breakwater on the eastern side of the harbour. On the main breakwater a re-enforcing block was built, on 147 piles driven to hard bottom along the whole outer face of the ell, 78 feet long, 12 feet wide and the full height of the wharf, to obviate settlement due to soft bottom and the eating away of the bottom logs by the "limnoria." The inner or northern side of the shore end of this breakwater has also been rebuilt and straightened and along the western or seaward side of the main breakwater a re-enforcing block or buttress was built, 364 feet long, 10 feet wide and from 7 to 16 feet high. This work also was rendered necessary by the ravages of the limnoria.

On the eastern breakwater or wharf a T was built at the outer end, 50 feet long on the face, 20 feet wide and about 15 feet high. It is built of solid stone filled cribwork, well fendered, ballasted and close sheathed. To prevent settlement, which was a defect of the old block, the T was built on 21 piles driven to hard bottom and cut off level with the beach. About 30 feet in length of the shore end of the same breakwater was rebuilt. With the exception of a few general miscellaneous repairs still necessary, this work is in thoroughly first-rate condition. The Port Maitland harbour works are of considerable importance and fully justify all expenditures hitherto made upon them.

In August and September, 1897, the department also built a lighthouse on the outer end of the ell of the main breakwater, at a cost of \$256.58; the expense being defrayed by the Department of Marine and Fisheries.

#### PUBNICO HEAD.

Pubnico Head is situated in the extreme south of Yarmouth county, about 20 miles south-east from the county town. It is 8 miles long, north and south, by three-quarters of a mile to one and one half miles wide. At the extreme head is a settlement of some five or six hundred people engaged in farming, lumbering and fishing. The Coast Railway has a station here, 31 miles from Yarmouth. Some ten or twelve years ago a little wharf was built by the inhabitants, aided, presumably, by the Provincial Government. It was 57 feet long, 28 feet wide and at the outer end  $12\frac{1}{2}$  feet high, consisting of a stone bank approach 15 feet long, a span of 21 feet and a roughly built block of round log cribwork 21 feet long.

In order to increase the accommodation of the wharf and to lengthen the time at which schooners can approach and lie at it, the department, during the fiscal year, expended the sum of \$895 in thoroughly repairing the old structure and building an additional block and span at its outer end. The new block is 28 feet wide across the wharf, 18 feet long in length of wharf, and 15 feet high, giving about 11 feet of water at the outer end at high water of ordinary spring tides. The span connecting the new block with the old work is 9 feet long. At low water there are only two or three feet in depth at the outer end. The new work has been well and substantially built and is of great benefit to the locality.



## Department of Public Works.

### PUGWASH.

Pugwash, Cumberland county, is a town of nearly 2,000 people, situate on the south side of the Straits of Northumberland, 50 miles west of Pictou, 10 miles west of Wallace, and 20 miles east of Baie Verte. It is the terminus of the Pugwash branch of the Oxford and New Glasgow division of the Intercolonial railway. From ten to fifteen millions feet of deals are annually shipped to Europe. Up to a year ago the only wharf from which lumber could be shipped was the railway wharf, but as this had a frontage of only 60 feet, not more than one vessel could load at a time, and there were often several awaiting their turn.

To facilitate this important export trade, the department, in May, 1897, let a contract for \$8,640 for the construction of an additional wharf. Work was begun in June, 1897, and finished in December of the same year. The wharf is a substantially built structure of stone filled cribwork, 145 feet long, 50 feet wide, and with 16 feet of water at its outer end at low water spring tides. From midway between high and low water to the bottom of the work it is constructed of creosoted timber on account of the prevalence and destructiveness of the "limnoria." The wharf is so located as to be reached by a spur track of the Intercolonial railway and it has already proved of great advantage to the locality.

### SUMMERVILLE.

Summerville, Hants county, is a village of 400 or 500 people, on the right bank of the Avon River, about midway between Windsor and the mouth of the river. A public wharf was built before Confederation by the inhabitants, aided by the Provincial Government. It is 275 feet long, 29 feet wide, and 20 feet high at the outer end, where at high water there is about 18 feet of water. The work was extensively repaired by the department in 1890 at a cost of \$3,414.52.

During the fiscal year ended 30th June, 1898, the sum of \$100.02 was expended in renewing some portions of the floor that were rotten and dangerous and in the bolting of a few new fender piles.

### THREE FATHOM HARBOUR.

Three Fathom Harbour, Halifax county, is situated on the Atlantic coast about fifteen miles to the eastward of Halifax Harbour. It is formed by islands connecting gravel beaches and though small, is well sheltered from all quarters and the small vessels which frequent the coast can enter and leave it at all times of the tide. It is the rendezvous of a large number of fishermen, principally inhabitants of the surrounding country, and during the fishing season is a busy place.

To prevent the sea from breaking through the narrow shingle beach that separates the harbour from the Atlantic, the department, in 1878, built cribwork along the crown of the beach. The work was extended and repaired in 1889 and its total length is 1,050 feet; it is built throughout of round log cribwork.

During the year the sum of \$500.19 was expended in raising and thoroughly repairing 200 feet in length of the work that had been undermined by the sea. The work still requires an expenditure of about \$500 for further repairs and to build a short return block on the end to prevent the sea getting round and attacking it in the rear.

### TROUT COVE.

Trout Cove, Digby county, is a small indentation about 1,000 feet long and 600 feet deep on the Bay of Fundy coast of Digby Neck. It is about midway and has the only breakwater affording shelter to fishing boats between Digby Gut and Petit Passage, being 18 miles south-west from the former. Spring tides rise 23 feet and neaps 19 feet.

The settlement at and near the Cove, which is called Centreville, has a population of about 300 people engaged in fishing and farming. The fishing fleet comprises from 25 to 30 boats of 16 to 18 feet keel, two schooners of about 30 tons each as well as one small steamer which, during the open season, runs to and from St. John, Halifax, Yarmouth and Lunenburg with freight, fish, lumber, &c. There is a factory for the canning of Finnan haddies and kippered herring, which is doing a large business. Within a short distance of the Cove is excellent ground for cod, haddock, hake, lobsters, &c. A breakwater was begun in 1856 by the inhabitants, aided by the Provincial Government. It was extended by the department in 1876 a distance of 178 feet; in 1880 and in 1881 extensive repairs were made to the old portion of the breakwater of which 100 feet had been destroyed in 1879. Since the last date it has been repaired several times by the department. For the purpose of increasing the usefulness of this work the department determined to lengthen it and on the 12th of April, 1896, a contract was awarded to Messrs. Reid and Archibald for the sum of \$3,896, for the construction of an additional block 100 feet long. Up to the 1st of July, 1898, timber was being procured and delivered but the work of construction had not been begun. With the new extension, the breakwater will have a total length of 474 feet on the north side, a width of about 30 feet on top and a height of 28 feet at the outer end, where there will be a depth of 24 feet at high water spring tide.

## WALLACE.

Wallace Harbour, Cumberland county, is situated on the south side of the Straits of Northumberland, about midway between Pictou Harbour and Bay Verte. It is at the mouth of Wallace River and is well protected from all winds. On the south side of the harbour, which is three-quarters of a mile wide, is situated the village of Wallace with a population of about 800 people. The industries of the place are chiefly farming and the quarrying and export of freestone, of which there are large and valuable beds in the immediate neighbourhood.

To facilitate communication with the north side of the harbour, a thickly settled district, the department in March, 1897, awarded a contract for the construction of a ferry wharf for the sum of \$2,329. This wharf was finished in September, 1897, it is a composite structure 320 feet long, the shoreward 170 feet being of block and span work 18 feet wide, and the outer 150 feet of pile work. The outermost 90 feet is built of double width so as to form an inclined slip where the ferry boat can lie at any stage of tide.

## WHITEWATER.

Whitewater, Kings county, is a small farming and lumbering settlement of some two or three hundred people, situated on the west coast of the Basin of Minas, about three-quarters of a mile south of Cape Blomidon and 10 miles north-east of the village of Canning.

To facilitate the shipping of lumber and for general purposes the department expended during the fiscal year the sum of \$3,999.08 in constructing a public wharf 285 feet long, 20 feet wide, and has an ell on the outer end 35 feet long where there is, at high water of ordinary spring tides, a depth of 17 feet water. The rise of tide here being 30 feet the wharf is high and dry at low water. It is constructed of block and span work, the blocks being of solid cribwork 19 feet in width and the spans 14 feet in clear opening. The work was well and cheaply built by days labour.

## WINDSOR.

Windsor, the county town of Hants, with a population of about 4,500 people, is an important town situated at the head of the estuary of the River Avon, on the Dominion Atlantic Railway and 46 miles north-west from Halifax. The shipping registered at



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the port for the year ended December, 1896, amounted to about 131,000 tons. In the neighbourhood are extensive quarries of gypsum which is shipped by water to the extent of 120,000 tons annually.

A couple of millions feet B.M. of lumber also forms part of the annual exportation by water. Up to about a dozen years ago the wharfs of the town were comparatively free of mud and at high water the largest vessels could lie alongside to load or discharge. Within the last few years, owing partly no doubt to the construction of the new highway bridge, the mud has accumulated in front of the wharfs to such an extent that it is only at extreme high water that moderate sized vessels can approach or leave the wharfs. Several of the leading shippers and merchants have on more than one occasion spent from one to two hundred dollars in digging and removing the mud but it again deposits and renders the expenditure useless. With the object of scouring away the accumulated mud from the wharfs the department expended the sum of \$3,299.71 in constructing a training weir down stream, from the corner of the Falmouth abutment of the road bridge, at an angle of 45 degrees with the bridge. The weir is constructed of brush mattresses at the bottom and cribwork on top, it was constructed under great difficulties, owing to the great rise and fall of tide, about 40 feet, the strong current at ebb and flood tide and the shifting quicksands on which the work stands. The length of the work finished during the year was 89 feet ; a length of 63 feet had the foundation cribs in place and a further length of 50 feet had the brush mattresses and stone foundations ready to receive the lower cribs. The weir is designed to be 600 feet long, at which length there is little doubt but that it will accomplish the object of its construction.

### YARMOUTH HARBOUR—STANWOOD BEACH PROTECTION.

Yarmouth, Yarmouth county, is situated at the south-western extremity of Nova Scotia. It is a thriving and prosperous town of nearly 7,000 inhabitants, next to Halifax the largest and most important in the province of Nova Scotia. It is the terminus of the Dominion Atlantic railway and the headquarters of the Yarmouth Steamship company, the fine Clyde built steamers of which make regular trips throughout the year to Boston.

There are several important manufactories in the place but the leading business is shipping, of which a larger tonnage is owned here than in almost any other locality in Canada.

At low water Yarmouth harbour, in which spring tides rise 16 feet and neaps 13 feet, consists largely of mud flats covered with eel grass. The harbour is formed by a succession of shingle and gravel beaches (called Stanwood Beach) aggregating about one mile in length, which connect the northern end of Cape Fourchu Island, also about a mile long, with the southern end of Stony Point on the main land and separate the harbour from the Bay of Fundy.

In 1867, it was found that the part of the beach between Cape Fourchu and Stony Point was gradually wearing down and that unless this action were arrested the sea would eventually sweep away the beach and destroy the harbour. The Government of Nova Scotia began the work of protecting the beach by constructing 200 feet of cribwork at Stony Point. Between 1873 and 1875 the Public Works Department constructed the remaining 2,800 feet of protection work required to reach Cape Fourchu and added buttresses to stop the movement of the gravel.

Between 1875 and 1888, the protection works although substantially built of stone-filled cribwork and close piled on their seaward face, had to be repaired and strengthened at various intervals ; the expense amounting to over \$25,000.

Between 1888 and 1896 no further works of repair were undertaken on the beach protection, which became dilapidated and decayed ; breaches being made through it by the sea at various places. During the fiscal year 1896-97 the sum of \$2,983.62 was expended in carrying on the most urgent works of repair, and in 1897-98 a further sum of \$3,234.51 was expended in continuing and completing these repairs. This last sum was applied in rebuilding a length of 50 feet at the eastern end of the protection work and constructing a groyne, projecting at right angles from the said end, for a distance



of 175 feet. The new groyne is 25 feet wide and 11 feet high, substantially built of round log and stone filled cribwork. The object of constructing this groyne was to protect the beach, at the north-eastern end of the main cribwork protection, by accumulating the gravel and breaking up the waves before they expended their force on the beach. It has admirably fulfilled its purpose as gravel has accumulated, at the junction of the groyne with the main work, to a depth of 12 feet, obviating all risk of further damage. An additional appropriation of three or four hundred dollars will be required for expenditure during the next year to completely finish the repairs to the main beach protection and to cover its eastern end with plank to prevent the ballast from being washed out.

## PROVINCE OF PRINCE EDWARD ISLAND.

### ANNANDALE.

Annandale Pier, King's county, is situated on the north side of Grand River, near its entrance into Boughton Bay. The pier, originally constructed by the local government, was taken over by the Federal Government in 1883. It consists of a shore abutment or approach 300 feet in length and 23 feet wide, with a pier head fronting on the channel, 140 feet long and averaging 36 feet in width.

The abutment or shore approach (excepting on a short span of 18 feet in length planked over), is constructed of close faced timber work, filled in with brush, stone and clay, the roadway being formed of the latter material while the pier head is formed partly of cribwork and partly of piling, the whole of which is covered by planking spiked to floor stringers. On the channel face of the pier there is a depth of seven feet of water at low waterspring tides, or 12 feet at high water springs which here rise five feet. The pier being a very old structure when assumed by the department and being exposed to attacks of the "teredo", it has been found necessary to incur expenditures nearly every year to keep the structure in a passable state for traffic, and to prevent its outer portion, which is carried on piling, from falling into the channel.

During the fall of 1897 the sum of \$100.06 was expended ; 27 piles or supports being put under the caps and floor stringers on different parts of the pier head, three rotten floor stringers replaced and 1,000 feet B.M. 3-inch planks used for renewing the floor where broken and unsafe. The work can, however, be considered to be only of a temporary nature as the entire pier head should be rebuilt.

### BELFAST.

Belfast Pier, Queen's county, locally known as "Halliday's Wharf," is situated on the south side of Orwell Bay about one mile from the village of Eldon. This pier, constructed by the Government of Prince Edward Island previous to Confederation, was taken over by the Federal Government in 1883. It has a length of 600 feet and, at its outer end stands a head block forming an L which is 28 to 30 feet in width and 145 feet in length along the channel, where a depth of about five feet now obtains at low water spring tides or 14 feet at high water.

The pier head had originally a length of 140 feet but when retopped in 1889 was shortened 10 feet ; the result being that the submerged remains of the old work at its north-eastern end rendered this part unserviceable during low water owing to danger of vessels being damaged when approaching the pier.

During the year a new block 28 feet wide by 15 feet long and of an average height of 15 feet was added to the pier head at the eastern end so as to cover the obstructing ballast and timbers.

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That part of the pier has thus been rendered available to vessels at all times, proving of much benefit, during stormy weather, to the passenger steamer "Jacques Cartier," which makes tri-weekly calls at the Belfast pier on her passage to and from Charlottetown and other points on Orwell Bay. General repairs were also made on the roadway and the expenditure incurred in 1897-98 for these repairs and the construction of the new block amounted to \$499.45.

To place the pier in a thoroughly useful condition some dredging along the inner side of the head block and over the area sheltered by the L is required; moreover, an opening left in the pier at about 200 feet from the head block should be closed to prevent drift material passing into the sheltered area.

### BAY VIEW.

Bay View Pier, Queen's county, is situated on the eastern side and near the mouth of Hope River which flows into New London Harbour, about  $3\frac{1}{2}$  miles to the eastward of its entrance. The pier has a total length of 509 feet and is 20 feet wide for the first 409 feet from the shore, thence its width gradually increases towards its outer end where it is 35 feet.

The work is not exposed to any heavy sea, but extreme high tides accompanied by storms from north to west usually cause damage to the roadway which is formed of clay and gravel filling with the exception of a small portion at the outer end.

A washout and settlement in the roadway occurred under such circumstances in the early part of the fall of 1897. The damage done was made good with broken stone and clay well packed together at a cost of \$20.01; the plank covering, guard timbers, &c., that had broken loose, being refastened.

### BRAE.

Brae Harbour, Prince county, is situated at the mouth of the Brae River on the northern side of Egmont Bay, 8 miles east of West Point and about 6 miles south of Coleman Station on the line of the Prince Edward Island railway. At the mouth of the river an area carrying a depth of six feet at low water is well sheltered by "Brae Island" and would prove a good fishing station and harbour of refuge for small vessels as well as a most convenient place of shipment for the surplus produce raised in the district, were it not that approach to it is obstructed by a sand bar, almost dry at low water, that extends completely across the entrance and which is parallel with the shore and at a distance of about 400 feet out from the eastern end of the island.

In 1890, with a view of improving this harbour the inhabitants of the surrounding district began the construction of a brush breakwater so as to contract the entrance, originally 800 feet wide, and deepen the same by the increased scour thus induced. They built a length of 350 feet, 18 feet wide, composed of poles, brush and some ballast with clay filling on top. To this the department added a length of 200 feet in 1891-92 and in 1895-96 repaired or, more properly, rebuilt the inner or original weak work constructed by the inhabitants.

As no benefit as regards deepening by scour had resulted from the work thus lengthened to 550 feet and a further extension of at least 500 feet being considered necessary to attain the desired improvement in the depth, it was decided to build during the year an additional length of 100 feet of breakwater. Most of the materials required for this addition were procured during the early part of the winter of 1897-98, with the intention of proceeding with the construction of the lower portion of the work through the ice in March last. Owing to the serious illness of the foreman in charge at the time when the condition of the ice was favourable for carrying on such work, nothing was accomplished further than procuring the following materials now on the site of the breakwater, viz.:—

57  $\frac{37}{40}$  tons square timber 12 inches by 12 inches.

85 hardwood piles 20 feet long, 9 inches at small end.

134 cross ties 24 feet long, 10 inches at small end.



149 ballast poles 20 feet long, 6 inches at small end.

46 longitudinals 22 feet long, 10 inches at small end.

2,000 pounds iron  $\frac{7}{8}$  inch and 1 inch.

12 tons stone ballast.

Total expenditure in 1897-98, for labour and materials, \$514.64.

#### HIGGINS SHORE.

Higgins Shore Pier, Prince county, is situated on Egmont Bay, about 10 miles north from Cape Egmont, and about 6 miles west from Richmond Station on the line of the Prince Edward Island railway. It has a width of 20 feet 6 inches, and is 453 feet long, extending out to a depth of about two feet at low water spring tides and giving at high water a depth of seven feet; spring tides here rising five feet. The pier, which was constructed many years ago by the local government, has solid close faced timbers on sides and outer end, securely tied together by cross ties placed at 10 feet centres, and central longitudinal timbers in each course extending over the whole length; the entire body of the work is filled with brush and stone, with clay on top to form roadway. During the year the sum of \$400.02 has been expended in raising the outer 150 feet of the pier two feet in height, some new face timbers, guard timbers, cross ties and fenders were also put on this length, and the entire length of the roadway was made up with broken stone and gravel filling. The work, which had become impassable, is now in good condition for traffic.

#### LEWIS POINT

Lewis Point Pier, King's county, is situated on the north side of Cardigan River, a short distance below Cardigan Bridge (the head of navigation) and about eight miles from its entrance into Cardigan Bay. The pier is 575 feet long, being composed of a shore abutment of 365 feet in length, two intermediate blocks each 35 feet long and an outer block 79 feet in length with intervening spans, each about 20 feet wide, out to the outer block which is 33 feet wide. At the outer end and sides of the outer block there is now a depth of 12 feet at low water or 17 feet at high water springs, the approach from the channel to the pier and the berths at it having been improved by dredging in 1894-95. During the year the whole of the top portion of the pier, including span beams, covering, &c., have been renewed, and the faces of the head block fender-piled at four foot centres with hard wood spars, and the roadway of approach was made up where required with broken stone and gravel, the whole pier being thus placed in a good and serviceable condition at an expense of \$1,000.24.

#### MIMINEGASH.

Miminegash Harbour, Prince county, is situated on the north-west coast, about 15 miles from North Cape and 18 miles from West Point. Before its improvement by the department, it was merely one of the numerous ponds along the coast that empty into the Straits of Northumberland through shifting sand beaches, the channels of which often change their course and are sometimes blocked when severe storms occur. The pond at Miminegash is sheltered to a great extent by "Miminegash Reef," a ledge of rock nearly a mile long, which lies parallel to the shore at a distance of about half a mile; it was the one mostly sought by fishermen during stormy weather, and after an examination of the ponds on the coast was selected in 1878 by the department when work was commenced for the formation of a harbour. The works built at Miminegash consist of piers or breakwaters on each side to make the outlet permanent, its width being reduced to 56 feet. The breakwater on the north side has a length of 535 feet, and that on the south side a length of 350 feet, there being also inward of the latter a beach protection 270 feet long to guard against scour and the formation of a new channel or outlet back of the southern work. Owing to age, scouring and destructive

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action of the "teredo," the works have become weakened in many places, and are now often damaged when severe storms occur. This happened during the fall of 1897, when serious damage was done to the outer end of the northern breakwater, to the close piling, to a number of face timbers and some ballasting being carried away. Repairs were made with a view of placing the breakwater in safety for the winter and spring, a total expenditure of \$328.91 being incurred. The work done consists in the replacing of face timbers, close piling and ballast carried away from the outer block and protecting the inner part of work with brush, poles and piling.

### NEW LONDON.

New London Harbour, Queen's county, is on the northern coast of the island, about 10 miles east from the entrance into Richmond Bay.

Within its entrance, which is about 1,200 feet wide, the harbour has a width of about three miles and receives the waters of the "South-West," the "French," the "Stanley," and the "Hope" rivers, which are navigable for short distances. On these rivers there are wharfs or shipping places from which a considerable export of the surplus produce raised in the surrounding districts is made. All these districts are thickly settled and well cultivated, and large quantities of general merchandise, coal, lumber, limestone, &c., are imported by water for the use of the inhabitants; there being no railway facilities as in many other places on the island. The harbour is largely used as a fishing station and as a harbour of refuge and is very conveniently situated, being near some of the best fishing grounds on the Gulf of St. Lawrence.

For the improvement of the entrance to the harbour, which is obstructed by a shifting sand bar, works were commenced by the department in 1878; they consist of beach protection and breakwaters on each side of the harbour mouth.

A work having a length of 1,120 feet, was built on the eastern side, and one 460 feet long on the western side the object being to preserve and extend the beaches by confining the current so as to cause increased scour and deepen the water over the bar; the result obtained is most satisfactory.

The depth of water has been increased by as much as six feet, giving a depth of 12 feet at low water and making New London harbour one of the best on the coast. The works are built partly of cribwork close-faced and of square timbers. The western work has never been damaged so as to require repair, but the eastern one being exposed to a strong current, at times to a heavy sea and to the cutting action of ice, &c., has often suffered serious damage owing to the inner portion being too slight to withstand a severe storm. Whenever found possible, with the sum available for expenditure, the breaches made through it at various times have been closed by rebuilding the work in a more substantial manner and it is hoped the whole breakwater will thus be fully secured.

During the year the sum of \$300.48 was applied in reballasting and making up portions where settlement had occurred on the east pier and placing brush on its outer side so as to cause sand to accumulate.

### NORTH CARDIGAN.

North Cardigan, King's county, is situated on the north side of the Cardigan River, about five miles from Cardigan Bridge and station on the line of the Prince Edward Island railway and is one of the Prince Edward Island piers assumed by the Federal Government in 1883-84. This pier has a length of 381 feet, consisting of shore abutment 100 feet long and seven "blocks" with intervening "spans"; it is from 23 to 25 feet wide to the outer block or pier head, which has a width of 32 feet; the "blocks" are from 19 to 25 feet long and the "spans" vary from 14 to 26 feet. The approach and all the blocks are constructed of squared timber, close-faced work filled with brush, stone and gravel, the latter being used to form the roadway, with the exception of the two outer blocks, and the spans which are floor stringered and planked over.



Being an old structure, much out of repair when assumed by the department, this pier has to be repaired nearly every year to keep it in passable condition. During the fall of 1897 the sum of \$24.59 was expended on repairs; broken stones and gravel filling were put in where settlement had occurred in the roadway and 1,500 feet B.M. of timber used in relaying broken and decayed planking.

#### RUSTICO.

Rustico Harbour, Queen's county, is on the northern coast of the island, about midway between "East Point" and "North Cape," and the most important fishing station on the coast. For the improvement of its entrance, which like all those of the harbours on the north coast is obstructed by an outer shifting sand bar, the department built during the years 1881-82-83-84 a breakwater on each side for the purpose of confining the current at ebb tide and by scouring increase the depth of water. The desired improvement has, to some extent, been secured; since the construction of the works some two or three feet more water are carried over the bar and the depth is now at low water 8 to 9 feet, or at high water spring tides from 11 to 12 feet, and this depth may be further improved by maintaining in good condition and extending the present works.

The breakwater on the northern side is, in a way, the most important as it protects an inner low beach on which most of the fishing stages and fish houses are erected. It was originally 1,240 feet long (that on the south side being only 450), but up to 1893 a length of 120 feet had been completely carried away by different storms and a further portion 150 feet long seriously damaged, the direct cause of which may be laid to the ravages of the "teredo." These marine pests by their unceasing attacks on the timbers below low water so weakened the structure as to render it unfit to withstand the movement of the ice or the severe storms to which the site is exposed.

During 1895-96, to prevent further damage, extensive repairs were carried out, by contract, on the outer portion of the work, an outer block 30'x60' being constructed, the adjoining 140 feet widened, raised, &c., and that part of the work generally placed in good condition.

Considering that the under portion of the breakwater constructed of piles, brush and stone had through age become in parts low and unsafe and that much of the sheathing of the sloping face of the adjoining section, had for the same reason been destroyed, works of repair and renewal were carried out on both the said sections during the year at an expense of \$473.07. A length of 185 feet of face was resheathed and all low parts made up with new piling, braces, walings, &c.

#### SOURIS

Souris Harbour, King's county, situated on the southern side of the island about 16 miles westward from East Point, is most important both as a harbour of refuge and port of shipment, being easy of access and perfectly safe over the portion protected by the breakwater at Knight's Point.

Souris is the eastern terminus of the Prince Edward Island railway and has a deep water wharf, from which shipments can be made later in the fall and earlier in the spring than from any other of the island harbours.

During the season of navigation it is largely used by coasters and fishermen as a port of call. The works constructed by the department afford good accommodation and a perfectly sheltered area (carrying from 12 to 20 feet of water at low tide) sufficient for a large fleet. The breakwater has a length of 1,200 feet, 270 feet of which were constructed previous to Confederation by the local government. The whole of this work stands in deep water and is exposed to the full force of the sea during southerly gales and to the shoving and cutting action of the ice in winter.

Since its construction the breakwater had to undergo extensive repairs, chiefly owing to the poor quality of stone procurable in the vicinity for ballast and the ravages

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of the teredo which, in nearly all the island waters, destroy timber works in a few years to such an extent as to render them unfit for resisting the forces to which they are exposed. Almost the whole of the seaward face of the breakwater has thus been destroyed or so weakened as to render its reconstruction or protection necessary, and this work has during late years been proceeded with in sections of various lengths.

Since the 1st July, 1896, the sum of \$1,000.09 has been expended in completing a length of 110 feet of new facing commenced in the previous year. This work is a distance of about 350 feet from the inner end of the breakwater and immediately inward of the new face constructed in 1893 under contract by Messrs. Wightman and Mellish, and is a similar construction.

The construction of a solid close-faced block of creosoted timber, 80 feet in length by 40 feet in width at outer end of breakwater with the placing of a stone slope for a length of 395 feet inward, was let by contract on the 17th February, 1896. These works, which had been in progress during the year 1896-97, were satisfactorily completed on the 8th September, 1897.

The following works were carried out, during the year by days labour:—The old end block of the breakwater was connected with the new head block; 90 feet of the middle section of the breakwater was refendered, reballasted, &c.; the outer narrow section, 395 feet long, was reballasted and of the inner part the planking was repaired and some ballasting, &c., done.

A quantity of planking, face timbers, longitudinals and cross ties was procured for proposed raising, levelling up, &c., of inner section of breakwater but the materials could not be used owing to the lateness of the season and the insufficiency of the balance available.

The expenditure incurred during the year for the works and materials above described amounts to \$10,761.43.

### STEPHEN'S PIER.

Stephens Pier, King's county, is situated on the southern side of the Montague River, about 6 miles above its entrance into Cardigan Bay, and immediately below "Lambert's Pier" and Montague Bridge. It consists of two wings or approaches about 50 feet apart and extending out from the bank of the river to the edge of the channel where the pier head has a frontage of 100 feet. The wings or approaches are respectively 90 and 115 feet long and are formed of close-faced timber work, the space between them being filled with brush and ballast discharged from vessels, gravel and clay being placed on top; these wings were originally connected with the pier head by "spans" or openings floor stringered and planked over.

The pier head is formed of pile bents, capped, floor stringered and covered with planking. This head block having become unsafe owing to age and destructive action of "teredo", was almost entirely rebuilt during the summer of 1897; 31 new bearing piles being put in and the floor stringers, covering, guard timbers and mooring posts being renewed. The timber facing of the eastern approach or wing was rebuilt during the year 1897-98. The expenditure incurred during the year for works of renewal and repair amounts to \$655.77.

### TIGNISH.

Tignish Harbour, Prince county, is situated on the north or gulf coast of the island, about six miles southward of North Cape, and is formed by the mouth of the Tignish River which empties into the Gulf of St. Lawrence.

As on each side of the mouth of this river the coast is quite straight, gales from north-east to south-east throw in a heavy sea. When moved by such seas the shifting sands of which the beach is composed, frequently completely blocked the mouth of the Tignish River which would remain closed until broken through by a freshet or other abnormal disturbing cause. To keep the river permanently open and to confine the channel to one place in its bed, the government of Prince Edward Island, in 1868, com-



menced the construction of works on both sides of the mouth of the river to contract the stream to a width of 40 feet; the effect of this contraction has been to increase the current and the river has not since been closed to navigation. The original works have since their transfer to the Dominion been repaired, raised and extended by the department; breastworks have been constructed on low lying sand beaches on both sides of the river to prevent the breaking through of the sea, and a portion of the channel has been dredged. These works have proved a benefit and have been the cause of a large increase in the business of the place. The principal difficulty is now, that the harbour is not large enough to accommodate all the vessels and fishing boats desiring to use it. As portions of the piers have become much decayed and injured by the scour and ravages of the teredo, works of repair were commenced on these piers in 1896-97, when the southern breakwater pier was partly placed in a good state of repair by reballasting, rebuilding the top and close-pile fendering portions of its channel face.

During the year repairs of a similar nature have been continued on both the southern and northern breakwaters. The remaining portions of the channel face of the southern breakwater were close piled, 320 feet in length of the northern breakwater pier rebuilt including new floor stringers, covering and close piling on channel face and a further length of 120 feet close-piled. The outer block was repaired and re-covered, and the breastwork extending from the northern breakwater to the high ground built up with brush, where it had settled, for a distance of 600 feet. A sum of \$1,923.31 has been expended on the above works of repair and renewal.

On the 8th March, 1898, a contract was entered into for the enlargement of Tignish harbour by extending the two breakwater-piers inwards, building brushwork, &c. At the close of the year the works let by contract were about half completed. Total expenditure incurred in connection with Tignish harbour works in 1897-98, \$4,093.65.

#### WEST POINT.

West Point Wharf, Prince county, so called from being the most extreme western point of the island, is situated on the north side of Egmont Bay along the eastern shore of Northumberland Strait, is about 14 miles west from O'Leary Station on the line of Prince Edward Island railway and about 30 miles by water from Summerside. A pier, one of those assumed by the department in 1883, was built previous to Confederation by the local government to afford landing and shipping facilities for the district; there being at the time no wharf or harbour in existence where vessels drawing more than a few feet could call along the whole coast between Summerside and North Cape, a distance of 60 miles. West Cape being midway was considered a favourable site for a pier, and the original work built at this point is said to have proved of great benefit up to the spring of 1884, when it was seriously damaged on the breaking up of the ice. A large field of ice was at that time driven upon it during a severe easterly storm and the entire outer portion of the pier moved out of position, the face timbers being broken and a large quantity of ballast washed out, and subsequent storms, ice shoves and drifts almost completely destroyed the structure.

With a view of providing urgently called for and much needed improved landing and shipping facilities, the department entered into contract 7th December, 1897, for: (a) Building up to 4 feet above high water and repairing the existing portions of the old pier, 290 feet long and 27 feet wide; (b) constructing an extension 325 feet long by 30 feet wide at top to reach 8 feet depth at low water spring tides. The works of reconstruction and extension were commenced during the month of March, 1898, and at the close of the year have been about half completed.

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### PROVINCE OF NEW BRUNSWICK.

#### BUCTOUCHE

By a narrow and winding channel, navigable for 11 or 12 miles, and four to five fathoms deep in some places but with a ruling depth of only eight feet, Buctouche River flows into Northumberland Strait about midway between Richibucto and Shediac, the embouchure being about 18 miles from each of these places.

At the village of Buctouche, Kent county (population 600), four miles from the sea, a quay for local traffic was built at right angles to the bridge and parallel to the river bank, in 1884-85. The work is of round timber, fendered with piles, and stands in a depth of 17 feet at low water, the length of face and width of top being respectively 300 feet and 40 feet. The trade carried on includes a small quantity of deals, hemlock bark and oysters. Latterly some coal, brought in schooners from Cape Breton, has been landed at the wharf and carried thence by rail to Moncton, 32 miles distant.

In 1894, a sum of \$1,500 was applied towards repairing damages to the wharf top occasioned by a fire disastrous to the village. In December, 1897, 20 fenders and 18 lineal feet of cap-timber, which had been procured but not before placed in position were put on and secured, at a cost of \$28.13. The revenue collected by the Marine Department during the year ended 30th, June 1898, was \$29.27

#### CAPE TORMENTINE.

Cape Tormentine, at the extreme eastern end of Westmoreland county, is the most prominent headland on Northumberland Strait and the south-western terminus of the winter ferry route between Cape Traverse on Prince Edward Island and the mainland. Spring tides rise  $7\frac{3}{4}$  feet, neaps  $3\frac{1}{4}$  feet.

Between 1886 and 1892 a breakwater-pier was constructed at this cape with a view of forming an artificial harbour for purposes of interprovincial communication, at the extremity of a peninsula which is the nearest point on the continent to Prince Edward Island. The harbour works carried out comprise a straight pier 2,500 feet long with head and return, each 400 feet in length, enclosing a basin about four acres in area with a ruling depth of 15 feet at low water, or 22 feet 8 inches at high water spring tides. For a distance of 1,300 feet from the shore the pier is a rubble mound 20 feet wide on top with pitch slopes of 2 H. to 1 V., while the remainder of the straight portion (400 lineal yards), is built of close-faced cribwork 30 feet in width. The head and return are of similar cribwork, but are 40 feet in breadth, from the base to low water, decreasing to 30 feet at the finished top (four feet above high water spring tides) and presenting a sloping face sheathed with hardwood to the north and east. A branch line thirty-six miles long, connects the pier with the Intercolonial railway at Sackville.

There being a storm wave at least six feet in height at Cape Tormentine, it was found that although the rails were secure where spiked to the covering of the cribwork, they were liable at the elevation of four feet above high water to be washed off the embankment or rubble mound which afforded no facilities for bolting. To prevent interruption in the traffic from this cause, the rails were raised two feet along the embankment in 1893-94. At the same time, a freight shed was built and protected by a break. The tops of the cribs receiving the foot of the hardwood sheathing composing the sloping face having been destroyed by the teredo, the planks thus left hanging are exposed below to upward wave motion, a force found by Stevenson to be 84 times greater when exerted vertically than when directed against the side of the breakwater. These planks were secured in 1893-94, as far as the worm-eaten condition of the timber permitted. In the following fiscal year, 321 lineal feet of worm-eaten longitudinals supporting the



sloping hardwood were replaced by new timber, a space of 90 lineal feet of new planking was laid and the remainder of the face secured wherever bolt-hold could be found in the honeycombed wood.

In 1895-96 similar temporary repairs were made, 414 lineal feet of worm-eaten longitudinals being renewed with fresh timber and 117 lineal feet of sloping face being relaid.

In 1896-97, repairs of the same kind were made for 154 lineal feet of the sloping face, in which 534 lineal feet of longitudinals were used. There being some slight difference of duration in favour of hardwood, birch longitudinals were for the most part inserted and secured with screwbolts. The ramp, 165 feet long, leading from the embankment to the cribwork was also covered with 3-inch plank in order to permit the passage of carts for occasional local traffic. The expenditure incurred in 1896-97 was \$566.98.

During the year, new hardwood longitudinals (generally four tiers) were placed in the work and secured with screw bolts, for a distance of 252 feet, to which the planks of the sloping face were secured. For a further distance of 50 feet the face-timbers were partially renewed. The expenditure for this year amounted to \$972.14.

The harbour is used during the season of navigation by vessels engaged in the deal trade with the United Kingdom, since it offers facilities for transferring deals in clean condition from train to ship without the loss of class and so of price. For this purpose it has to some extent superseded the open roadstead of Baie Verte, formerly a centre of the deal trade.

On account of the prevalence of the teredo, any works built in the future in Northumberland Strait should be constructed of creosoted timber, stone, or concrete. The worm-eaten condition of Cape Tormentine requires that the course hitherto customarily adopted in similar cases, *i.e.* external protection with stone, should be taken. For the quay-face of the winter berth it would be best to use concrete. Although the top appears in good condition, the substructure of the cribwork of the pier has been so injured by the teredo that the upper works notwithstanding their sound state, are liable to be sheared off the impaired foundation by ice or storm. The revenue collected by the Marine Department during the year ended 30th June, 1898, was \$575.31.

#### CLIFTON.

At Clifton, in Gloucester county, ten miles west of Grande Anse, and 17 miles east of Bathurst, a breakwater, originally 425 feet long, built by private persons to facilitate shipment of stone from large quarries at that place, was acquired by the department in 1878 and extended in the same year. The work, of round and square cribwork partially protected by stone, is now 750 feet long over all; 220 feet of this length being a pier-head placed at an acute angle with the approach in order to give shelter between east to north-west. Formerly the deepest berth was said to give 12 feet at low water, but the depth has now been reduced by shoaling to eight or nine feet alongside the breakwater. This artificial harbour affords the only shelter for coasting vessels and fishing boats between Caraquette and Bathurst, a distance of about 37 miles. Spring tides rise 7 feet.

Between August and December, 1897, several small breaches made in the seaward face of the work were closed by the insertion of new face-timbers and 102 square hardwood fenders, 9 inches thick, laid close, and extending from the bottom to the top of the break (an average distance of about 20 feet), were placed round the north-east angle of the breakwater which forms the artificial harbour. The break, four and five tiers in height, was also renewed for a distance of 32 feet. In parts where removal of covering became necessary to effect the repairs, any voids discovered were filled with ballast. As the bottom is rock, close-piles could not be driven; in order both to protect the work and to secure the feet of the fenders, generally in six feet at low water ordinary spring tides, a slope of 145 feet in total length made of large stones, averaging nearly a cubic yard each, was placed round the angle. These blocks, when raked down by action of the sea, will form the foundation of a stone slope intended to be placed round the whole



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work, and effectually secure the bottom of the fenders. This measure served well during the winter of 1897-98. After these repairs had been concluded, costing \$850 a heavy storm at the close of navigation stripped about 75 pieces of old covering from the unrepaired portion of the top, and removed some ballast, which necessitated the expenditure of a further sum of \$186.56 to make good the damage done.

Eight new stringers from 12 to 20 feet long were placed in position, rather more than 6,000 feet B.M. of new covering was laid, a new tie-rod inserted, and a quantity of ballast two to four feet in depth was placed in the work, the repairs extending over a distance of 88 feet. The total expenditure for repairs, &c., amounted in 1897-98 to \$1,036.56. The revenue collected by the Marine Department during the same year was \$18.38.

### DALHOUSIE.

This town, in Restigouche county, at the head of Baie des Chaleurs, ranks third on the list of deal ports of New Brunswick. The harbour gives secure shelter in six or seven fathoms, and during navigation is the best in the province. Dalhousie is the only harbour suitable for a coaling station for the fleet on the gulf coast of New Brunswick.

For use of vessels engaged in the deal trade, the department added in 1887 to the Intercolonial railway pier, a ballast wharf 300 feet long and 23 feet wide, placed parallel to the shore in about 15 feet water at low water, now reduced in places to about five feet by shoaling.

Expansion of the ice, consequent upon the cracks caused by tidal fluctuation, exerts from the shore a shearing stress against the top of this work, which was in 1897 partly thrust off for a distance of 118 feet, the overhang being 10 feet. Pending reconstruction the wreck was removed in October, 1897, and the structure placed in condition to resist the winter, at an expense of \$136.44. The revenue collected by the Marine Department during the year amounted to \$94.34.

### FORT DUFFERIN.

Fort Dufferin, St. John county, was originally built by the British Government on Negro Point at the western entrance to the harbour of St. John; a ten-gun battery being placed in position on this point, which is 60 feet in height above high water mark. This fort is now maintained by the Dominion Government, which also built an important breakwater at this point for the protection of the harbour of St. John.

In order to preserve the headland called Negro Point from erosion by the waves, this department built in St. John harbour a retaining wall, of sheathed cribwork, extending 815 feet in a northerly direction from the inner end of the breakwater. The work is seven to 14 feet wide on top and about nine feet in mean height. The crest for almost the whole length is surrounded by a break  $2\frac{1}{2}$  feet high.

During the year 1896-97 a gap 81 feet long in the break was repaired, 200 lineal feet of longitudinals were renewed inside and 128 cubic yards of ballast were restored to the work, while the sheathing was patched at intervals along the face with hardwood planking. In order to raise the beach and reduce the area of timber face necessary to be repaired, towards the end of 1896, a groyne 40 feet long, 10 feet wide and four feet in mean height, was built of hardwood piles, timber and stone. In 1897 the final extension of the cribwork, a distance of 130 feet, was begun and by the end of the year 1896-97 brought within two tiers of the full height.

In the present year the new extension was completed, ballasted and sheathed; small repairs were also made to the sheathing of the old work; the expenditure amounting to \$510.98.

### HERRING COVE.

Herring Cove, Albert county, is situated  $11\frac{1}{2}$  miles west of Cape Enragé, forming the western extremity of Salisbury Bay an indentation of the Albert coast of the Bay of Fundy. Spring tides rise 37 feet, neaps 30 feet.



A breakwater 215 feet long, 31 feet wide on top and 43 feet high at the outer end, was built in this cove by the Federal Government in 1873, at a cost of \$13,113.45. The inside face of the work is of square timber, while the outside, strongly battered, is of round timber close-fendered. Founded on a reef under the lee of Mathew's Head and directed towards Owl's Head, the work trending towards the land lies in the general direction of southwest waves and affords, during storms, some slight protection from under-tow to small craft, if beached in the extreme angle of the cove.

The cove is noted for good holding-ground and is one of the two places on the New Brunswick coast of the Bay of Fundy, east of St. John, considered to present natural features favourable for the construction of a harbour of refuge.

The vessels carrying deals from Alma to the United Kingdom, anchor off this breakwater to receive cargoes by lighter. Alma, two miles distant is the terminus of the Albert Southern railway.

During the year 1896-97, works of repair were carried on on the upper-works of this breakwater, generally decayed from age. The cribwork break extending the whole length of the work was removed and rebuilt, while the decayed part of the closefendering was almost entirely replaced by sound material. The expenditure amounted to \$990.75.

During 1897-98, the work performed consisted in placing five rows of new floor stringers, each row extending for 200 feet; in laying about 18,000 feet B.M. of new covering on the top of the breakwater; in renewing the cap-timber, 12 inches square for a distance of 160 feet; in placing 15 new fenders, varying from 13 to 30 feet in length, against the side of the work; and in completing the repairs to the close-sheathing of the seaward face by the addition of 51 pieces, five to nine feet long. Eighty-two yards of rock were also blasted from a reef which prevented vessels from coming alongside the work. The expenditure was \$500.

#### MIZZONETTE.

This work, nine miles east of Grande Anse, Gloucester county, was built by the department in 1889 on the southern shore of Mizzonette (Maisonnette) Point, and inside Caraquette harbour for a local boat landing. The wharf, 12 feet wide on top, and 500 feet in total length, is constructed of round timber in the form of blocks and spans of 12 and 20 feet respectively. The head, also of round timber, is 20 feet square and stands in about two feet at low water. Spring tides rise six feet.

For an unimportant boat landing, this work, already becoming worm-eaten, is very long, and since there appears to be the same depth of water at a point 300 feet distant from the shore, as was found at the outer end, it is proposed to shorten the work and reduce the cost of maintenance. To this end, a cribwork block 17 feet long, 12 feet wide, and 10 feet high, was built during 1897-98 with the object of forming a new pier head; the covering between the new block and the shore was also repaired in places and the approach restored. The expenditure incurred amounts to \$249.75.

#### PARTRIDGE ISLAND.]

Partridge Island is a rocky eminence standing at the mouth of St. John harbour and dividing the entrance into east and west channels. The island is devoted to quarantine and lighthouse purposes.

At the northern end of Partridge Island two narrow piers of cribwork give shelter to the boat landing of the station. Between them a substantial block of cribwork 50 feet long and 22 feet wide, begun and nearly finished in 1896-97 as a foundation for the disinfecting house, was completed in the succeeding year; a boat slip, intended for use at low stages of the tide was partially built and a new mooring post put in and minor repairs made at the end of the west pier.

The expenditure for the year ended 30th June, 1898, amounted to \$676.69.

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### QUACO.

Quaco, St. John county, is on the northern coast of the Bay of Fundy, about 30 miles to the north-eastward of the entrance to St. John harbour. The bay is semi-circular and lies open to the south-east between Quaco Head and Macomber Point, some two miles apart; its depth from a straight line drawn between these two points being about a mile. A small river discharges into the eastern end of the bay near its mouth, and a harbour of refuge has been formed there by the construction of breakwaters, each 300 feet in length, one on each side of the mouth. The harbour is dry at low tide, and only accessible for coasting vessels and schooners which come to load timber, &c., or to seek shelter for about six hours during each tide. Spring tides rise about 30 feet and neaps 23 feet.

The west breakwater which had been damaged by storms for a distance of 149 feet, the sheathing and several longitudinals of the sloping outside face being stripped off and a quantity of ballast washed out, was repaired during the year ended 30th June, 1897; besides which the east breakwater was protected by brush and stone placed along the foot of the cribwork to prevent scour from the fresh water stream.

On the western breakwater the longitudinal face-timbers of the damaged part were generally renewed with birch, 14 inches square, and secured where possible with screw bolts. The stone washed out was replaced and some additional ballasting done. The face was also covered with new sheathing for the distance mentioned, two fenders were renewed and a ladder placed near the shore end. Thirteen new fenders were also placed on the east pier, and the decayed tops of five others replaced by sound material. Small repairs were made to the covering and sheathing, and another ladder placed against that work. The expenditure in 1896-97 amounted to \$1,377.51.

In 1897-98 by the striking of a schooner the corner fenders and sheathing of the west pier were started from their position. The damage thus done was repaired by an expenditure of \$50 applied to closing a small opening and strapping the angle.

### RIVER ST. JOHN AND TRIBUTARIES.

During the year 1897-98, assistance was given by the department to the following wharfs built by the Provincial Government of New Brunswick:—

To Chipman wharf, 80 feet long in the face and standing in about eight feet at low water, \$300. This wharf is situated at the village of Chipman on Salmon River in Queen's County, at the head of the Grand Lake system of navigation.

To Burton wharf, 56 feet long in the face, standing in about four feet at low water, \$180. This work is near Oromocto, in the County of Sunbury, on the main river St. John.

To Court House wharf, 42 feet long in the face, standing in about six feet at low water, \$240. This wharf is also on the main river and in Sunbury County.

*River Tobique.*—For the passage of tow-boats on the Tobique, 19 channels, 18 inches deep and 30 to 75 feet wide, were made through as many shoals for an aggregate length of 3,525 feet. On the same river the construction of a dam at the Forks was begun and was about half completed by the end of the year when the expenditure on this tributary amounted to \$764.39.

*Grand Falls.*—At Grand Falls, the end of the shear dam, injured by ice, was cut off and the opening closed at an expenditure of \$100.

*St. Francis.*—By an outlay of \$297.90, channels were made on the St. Francis through Gros Bar, Jones' Bar and Cross Lake Rapids, an aggregate length of 1,000 feet; while at Abb's Island and Horseback Rapids, tow-boat navigation was improved by the removal of boulders and ledge rock. The expenditure incurred in 1897-98—for works carried out on the River St. John and tributaries—amounted to \$1,882.29.



## SHEDIAC.

Plating bolts at the foot of the sloping face of the breakwater, at Pointe du Chêne (Shediac), Westmoreland county, which had been slightly started by ice, were driven down at a cost of \$2.

## SHIPPEGAN.

In the passage from the Baie des Chaleurs to the Gulf of St. Lawrence, between Shippegan Island and the mainland, two fathoms can be carried almost right through. The obstruction to the strait lies at the southern end and consists in a bar of littoral drift 800 yards wide between the 12-foot lines, over which formerly only  $3\frac{1}{4}$  feet, but since construction of the works, nearly  $6\frac{1}{2}$  feet are found at low water.

To the fishing fleets of Shippegan, Caraquette and other parts of Baie des Chaleurs the outlet to the gulf by way of Shippegan Gully is of the utmost importance; it furnishes means of avoiding a long and hazardous voyage round Point Miscou besides effecting a gain of two days per week in reaching and returning from the banks. The mouth of the gully (lying 16 miles north of Tracadie and about the same distance east of Caraquette) is bordered by beaches of sand above water level; this sand is apparently deposited upon a heavier drift of shingle.

The works at Shippegan are intended to preserve and to deepen the channel between two sandy beaches by which access is given for fishing boats to the sheltered waters of Shippegan harbour. The depth of this channel is maintained by tidal scour, hence it is of the utmost importance that no other opening of any kind than the navigable channel should occur in the beaches.

From 1875 to 1889-90 the works were confined to the east side and consisted of a dam 890 feet long of brush, stone, and piles, built to close a run through the beach and protection works constituting the pier, 1,220 feet in total length, one-third being cribwork, while the remainder resembles in composition the dam.

The west pier, 1,104 feet long, is constructed of pilebents 10 feet apart, carrying walings to which close-piling is secured. The interior is filled with layers of brush and stone. Between a cribwork spur of the eastern breakwater or pier-head and the west pier-head, a distance of 718 feet, the scour induced by contraction has been sufficient to produce an additional depth of three feet nearly all across.

The east pier having been breached by the sea in three places, the west pier-head having been damaged, and the west beach so denuded of sand by the wind as to be completely cut through to the danger of the channel (by loss of scour), extensive repairs were begun in September, 1897. During this year the breaches on the east side of the gully were partially closed with cribwork and with piles for a distance of 210 feet, and wholly closed for a distance of 134 feet by work virtually involving reconstruction of the pier. The eastern pier-head was protected at the corner with close-piling; the cribwork strengthened with piles and walings; the dam on the eastern beach repaired for a distance of 452 feet; and an apron 375 feet long applied to stop leaks. Some of the work performed on the east side was rendered necessary by storms which raged in November, 1897.

On the west side, 39 close-piles were driven round the pier-head which was refilled to a depth of five feet with brush and stone; while 2,000 feet B.M. of covering were laid at the inner end. To restore the crest of the beach a breastwork 1,684 feet long, formed of stakes, poles, brush and shingle having on each side hurdle groynes at intervals of 40 feet, was more than half built during the year ended 30th June, 1898. This work, 17 feet wide across the hurdles, is intended to catch the sand when driven by the wind and to raise the beach sufficiently high to allow bent grass to be planted, when further denudation will be prevented or retarded. Although not yet finished, it has caused an increase in elevation of a foot in the beach for about one-half its length.

A false channel, originally five feet deep and 120 feet wide, was closed with brush mattresses and ballasted with stone. After the mattresses had been placed, another

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false channel, 43 feet long, 15 feet wide and of the same depth, made by high tides through the beach, was closed in a similar manner.

Total expenditure incurred in 1897-98 . . . . . \$9,999 97

Materials to the value of about \$1,500 remained available for the continuation of the work next year.

The value of the fishery of the districts benefited was, in 1897-98, \$629,696.

### ST. JOHN HARBOUR—NEGRO POINT.

Negro Point is a headland about 60 feet above high water mark, at the western entrance to St. John harbour, which is formed by the estuary of the River St. John on the northern side of the Bay of Fundy.

Spring tides rise 28 feet, neaps 22 feet.

In addition to convenience of position for distribution by rail of cargoes landed at the city of St. John, St. John harbour is remarkable principally for great tidal range and for consequent freedom from ice in the winter months. The harbour is open, broadly speaking, from south-east to south-west, but southerly waves are broken by Partridge Island and south-west waves are mitigated by Negro Point breakwater; while the foul ground, a shoal tailing down from the peninsula on which the city is built, must have more or less effect in moderating the force of south-easterly seas rolling round Mispec Point.

By Partridge Island, a rocky eminence devoted to quarantine and lighthouse purposes, the entrance of St. John harbour is divided into east and west channels. In the former or main channel a depth of 21 feet is found on the bar at low water ordinary spring tides, according to the chart. Half a mile inside the crest of the bar, a depth of five fathoms is found in the narrow fairway, while higher up and between the principal wharfs on either side of the harbour (500 yards broad at that point) 12 fathoms are given in mid-channel. The west channel, 10 to 14 feet deep at low water and originally 1,200 yards wide, has been contracted by Negro Point breakwater extending 2,200 feet in a south-westerly direction from the headland, so styled.

The official reasons for undertaking this work are thus stated in the reports of the Minister of Public Works for 1875 and 1882:—

“1875.—This breakwater extends south-easterly from Negro Point at the western entrance of the harbour of St. John. When completed, it will extend a distance of 2,250 feet, closing up the west channel to that extent, leaving, however, a width of 1,000 feet between the outer end and Partridge Island. The object is to break the force of the seas which roll into the harbour of St. John during the south-west gales in the Bay of Fundy and which render it dangerous and almost impossible at such times for vessels to make the harbour.”

“1882.—South-westerly winds threw in a heavy sea through the western channel which rendered it difficult for vessels to make the harbour as they were in danger of being driven on the foul ground on the eastern side of the channel. In the spring of 1875, a breakwater, 2,250 feet long to partially close the western channel, was begun, and in September, 1877, completed.”

Reference to the chart will show that as long as the present opening remains the object of the breakwater has been only partially fulfilled. In dealing with reduction of the bar, a more cogent reason than improvement of shelter may be found for the extension of the work to Partridge Island.

The breakwater consisted at first of a cribwork core, 30 feet wide at the base and 15 feet wide at the top (5 feet above high water ordinary spring tides), protected on both sides by stones sloping to seaward at the rate of two horizontal to one vertical and landward at the rate of one to one. By the month of February, 1879, 1,300 lineal feet of the cribwork had been swept away to a depth varying between 13 and 19 feet from the top, the stones having been raked down by wave-action to a slope more nearly approaching the angle of repose of the material. In 1880, temporary repairs were made,



and in 1881 a contract, completed six years afterwards, was entered into, whereby the lost cribwork was replaced by heavy stones and the seaward slope made 3 to 1. Even this flatter inclination proved too steep for stability, consequently, notwithstanding their size, the stones, though smoothly laid, were soon displaced by the sea. A length of 50 feet of the breakwater, extending at full height beyond a masonry pier built under the same contract to support a beacon, was also swept away. From 1891 to 1894, desultory repairs were made by the addition of large stones, chiefly deposited about the end to prevent the lighthouse from being undermined.

In May and June, 1895, four large blocks of concrete were placed for the same purpose in front of the pier at its base. In 1895-96, seven concrete blocks founded at about the level of low water neaps, were built in situ around a quadrant of the outer end, to receive the foot of a slope proposed to be laid of heavy granite blocks inclined at 4 to 1. The blocks were from 59 to 91 tons each, all but the heaviest being laid in one tide. The granite pier was also re-enforced by a semi-circular skin of concrete 7 feet in average thickness and strongly battered, placed around the front and brought to the level of high water springs. The footing blocks were 15 feet long, 12 feet wide, and unless varied for the sake of foundation, three feet high in the face, sloping upward at the rate of four to one on the top. Each block was free to settle independently, but all were keyed together by splayed concrete joggles. Inside part of the space within the quadrant, stones of the original work, added to some small granite, were collected and grouted as far as funds permitted, in default of the heavy granite (which will require special plant) necessary for the slopes of this breakwater; but weight is the great desideratum.

Pending consideration of works necessary for deepening the entrance to the harbour, which might possibly involve the extension of the breakwater, nothing more was done during the year 1896-97 than appeared requisite to protect the unfinished superstructure just begun and to preserve the lighthouse, except the completion of a break at the shore end.

To this end, 15 blocks of concrete forming aprons were laid in position at the outer end of the work between October, 1896, and June, 1897. A quantity of stone which had swept round the point of the breakwater from the seaward to the harbour side was also replaced in position. Some of this stone was laid outside the heavy footing-blocks built in the previous year and some applied to restoration of the crest of the work at the back of the lighthouse. Breaches carried below the level of high water have been made by the sea at five or six points in the rubble mound between the lighthouse and the shore. An illustration of the violence of the seas which break against the Negro Point breakwater is furnished by the removal of a stone of five tons a distance of 76 feet in one winter. A marine dynamometer secured to the masonry of the lighthouse records the wave-force at 4,000 lbs. and upwards per square foot.

In order to retain along the seaward face of the work, for natural protection, the littoral drift formerly swept by the waves over the top into the harbour, a break of piles, brush, stone and timber 270 feet long, eight feet wide and four feet high, begun in 1895, was completed in 1896-97, and extended 140 feet along the timber work during that year, with good effect. As a result of the construction of the break, the foreshore has advanced seaward 62 feet along the face at the level of the top of the breakwater, while at one point the beach has increased in height  $2\frac{1}{2}$  feet and in breadth 75 feet.

A general accretion of the beach has taken place. In addition, a tongue of drift observed after the erection of the break, when near the shore, has at the foot of the talus on the seaward side, travelled 200 yards or more towards the end of the breakwater. The formation of this spit, generally 10 feet wide, and two feet high, against the work, indicates that the drifting sand, gravel, shingle, &c., which formerly went over the breakwater into the harbour, will in time afford important natural protection to the work and will reduce the length of face to be maintained.

During the year 1897-98, as a measure of precaution, 152 yards of granite were obtained and deposited about the lighthouse for protection during the winter; while stones, previously removed by the sea, were replaced in position.

The advance of the foreshore rendered necessary the extension of the timber break, which was carried a distance of 80 feet farther along the top of the breakwater. A

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small groyne was also built for the purpose of obtaining some information as to the extent of the littoral drift near the shore end. To preserve the timber, the tops of the piles and the knees of the break were given two coats of pitch.

The expenditure in 1897-98 was \$1,840.65.

### STONY CREEK.

At Stony Creek, Albert county, eight miles below Moncton, on the Petitcodiac, there is a groyne of round and square timber 290 feet long, 20 feet wide on top and 36 feet high at the outer end, which has been built by the department, 1873 to 1875 ; the object being to deflect the current from a reef said to be dangerous to vessels and to protect the river bank from erosion.

During the year ended 30th June, 1898, four tiers of the end were rebuilt and the corners fendered, one being sheathed and strapped. The cap-timber was also renewed for a distance of 294 feet, and fenders were placed against the sides. The work was filled with brush and stone for a distance of 140 feet and a new mooring-post was placed at the end.

The expenditure was \$500.

### TWO RIVERS.

Two Rivers is a small cove of Chignecto Bay on the shore of the county of Albert, about six miles from Anderson's Hollow, and the same distance from Harvey.

Under contract dated 6th of April, 1898, the construction of a wharf, intended to facilitate the shipment of agricultural products, was begun on the 25th of the following month. The work is to consist of a pier-head, 40 x 35 feet, connected by stringers crossing an opening of 20 feet with a shore block 40 feet wide and 56 feet in mean length. The whole is of round cribwork, approached by a ramp 35 feet long. At the close of the year the pier-head, intended to stand in 14 feet at high water, was 11 feet high at the outer end, and four feet high at the inner end ; while the shore block had been brought up to a height of three feet from the foundation.

Expenditure up to 30th June, 1898, \$442.82.

### TYNEMOUTH CREEK.

Tynemouth Creek, St. John county, 21 miles east of the city of St. John, is one of the several small havens, dry at low water, found on both shores of the Bay of Fundy, which are only useful on account of the high range of tide. Tides rise here about 28 feet. Inside a beach of gravel and stones, is a tidal basin, accessible to small vessels at high water by an opening at the east end of the beach.

In 1874-75 the department built a substantial cribwork pier on the rocky fore-shore of the eastern cliff to prevent vessels from taking ground on that side.

In 1882-83, another work to maintain the channel was built on the point of the beach on the opposite side.

In 1894-95, a sum of \$225 was applied in replacing some of the fenders and covering of the east pier and in removing part of a rocky ledge obstructing the channel.

In 1897-98, a sum of \$510 was expended in removing 813 cubic yards of shingle from a shoal obstructing the entrance, and in effecting minor repairs to the west pier.



## QUEBEC.

## ANSE À BEAUFILS.

Anse à Beaufils is a small fishing settlement in the county of Gaspé, on the Gulf of St. Lawrence, 6 miles south of Percé. Spring tides rise  $5\frac{1}{2}$  feet, neap tides 3 feet. Across the mouth of the river Anse à Beaufils, which flows through the settlement, a bar has been formed by the accumulation of sand. This bar encloses a small basin which is used by the fishermen as a harbour of refuge for their boats during stormy weather. For a short time in the spring, an entrance is kept open by the current of the river, but as soon as the freshets are over the entrance is closed and the fishermen have to haul their boats over the bar into the basin.

In the session of 1897 a sum of \$1,600 was granted by Parliament for construction of a retaining wall from deep water in the Gulf to deep water in the basin, and for cleaning by hand of a channel through the bar, along the south face of the wall. Owing, however, to delays in procuring materials no work was done, the only expenditure incurred being \$577.31 towards the purchase of timber, iron and tools.

## ANSE AUX GASCONS.

The village of Anse aux Gascons, in the county of Bonaventure, is situate on the north shore of Baie des Chaleurs, in the municipality of Port Daniel East, seven miles to the eastward of Port Daniel and 42 miles west of Percé. Spring tides rise 6 feet, neap tides 3 feet. The locality is considered to be one of the best fishing stations on the Baie des Chaleurs, the fleet consisting of over 60 boats in summer and 100 in the fall. The codfish catch averages from 4,000 to 5,000 quintals every season, beside which large quantities of salmon and lobsters are also obtained. The bay is entirely open to southerly gales against which it affords no protection. In order to enclose and protect an area with sufficient depth of water at extreme low water spring tides to accommodate the largest class of fishing boats and trading vessels of moderate draught, a sum of \$5,000 was appropriated by Parliament in its session of 1897 towards the construction of a breakwater, 400 feet long and 20 feet wide. Tenders were called for the work, and on 1st February, 1898, a contract was entered into for its construction for the bulk sum of \$11,494. The work was well under way at the close of the last fiscal year when a sum of \$5,000 had been expended.

## BAIE ST. PAUL, CAP AUX CORBEAUX.

The village of Baie St. Paul, in the county of Charlevoix, with a population of about 1,400, is situated on the north shore of the St. Lawrence, sixty miles east of Quebec. It is built on both sides of the Rivière du Gouffre, which empties into a bay one mile and a quarter deep and three miles wide at its entrance. The bay is dry at low tide with the exception of some small channels. Spring tides rise 20 feet, neap tides 13 feet. In 1874-75 an isolated block 200 feet long and 25 feet wide, with a head 60 feet long and 50 feet wide, was built in 12 feet of water at low water spring tides, on the west side of the bay at a distance of 3,000 feet from shore at high tide and 600 feet at low tide. This block was built for the accommodation of the lightships when taken to or removed from their moorings in the St. Lawrence, and was also used by steamers as a landing pier. But as it was not connected with the shore the accommodation it afforded to passengers and freight was so poor that it was decided to build a landing pier on the east side of the bay, at Cap aux Corbeaux, three miles from the village.

## Department of Public Works.

*Construction.*—During the winter of 1881-82 timber was procured for the proposed structure, which was completed in 1885 at a total cost of \$35,933.71. It was then 712 feet long, 30 feet wide, and its head stood in seven feet of water at low water spring tides. In 1887 an earth embankment and cribwork approach were built at a total cost of \$1,170.60 to connect its shore end to the road built by the municipality. Owing, however, to the insufficient depth of water at its head the pier could not be and was not used by steamboats, and passengers and freight were still landed on the isolated block from which they had to be conveyed in row-boats or scows to shore. It was therefore decided, in 1888, to add yearly to its length until a depth of about 14 feet at low water spring tides was reached. With this end in view four extensions, aggregating 354 feet in length and 30 feet wide, were built by contract, at a total cost of \$24,512.84 including superintendence. The first extension—60 feet in length—was constructed in 1889 at a cost of \$4,867.92; the second, 94 feet in length, in 1890 and 1891 at a cost of \$7,327.13; the third, 100 feet in length, in 1893 at a cost of \$6,372.79; and the fourth, also 100 feet in length, in 1895, at a cost of \$5,945. The depth of water at the head of the pier at low water spring tides was therefore increased from seven feet in 1885 to eight feet in 1889, nine feet in 1891, 10½ feet in 1893 and 11½ feet in 1895. The pier, as it now stands, is 1066 feet long, 30 feet wide throughout, and 37 feet high at its outer end. Its top stands 5½ feet above high water spring tides. It is built throughout of close-faced cribwork filled with stone ballast. The face timbers are 12" x 12" dimensions, and the cross ties and longitudinals are round logs not less than 14 inches diameter at the small end.

In order to reach the proposed depth of 14 feet at low water spring tides, and complete the pier in accordance with the scheme laid out in 1888, a further extension 145 feet long is required. Plans and specifications for this work, which will constitute the head of the pier, have been prepared—a portion of the amount required was granted by Parliament last session—and tenders will be called for its execution.

*Repairs.*—In 1886 some minor repairs amounting to \$82.16 were effected, and in 1888 a further sum of \$35.66 was expended. In 1893 the spring thaw and rains caused an extensive landslide which completely obstructed the road leading to the pier for a length of 200 feet. Another approach has therefore been built some distance out from the one built in 1887, in order that, should another land slide occur, which is very probable, the new approach would not be interfered with. The new approach which is 260 feet long, 15 feet wide and of an average height of nine feet, was built of cribwork filled with stone and gravel at a total cost of \$898.47.

In November, 1893, a sum of \$124.27 was expended in renewing 234 deals in the flooring of the old portion of the wharf. In 1895 general minor repairs were effected to the amount of \$379.77. In November, 1896, the approach built in 1893 was raised 2½ feet on its total length of 260 feet, 18 toises of stone ballast were placed in it, and it was covered with 3-inch deals. Thirty fenders were placed on its seaward face to strengthen the work. Part of the flooring of the pier was also renewed, 300 deals being employed. These repairs were executed by day labour at a cost of \$900.42.

During the past year 1897-98, the earth embankment, which constituted a portion of the approach built in 1887, was washed away and was rebuilt of cribwork filled with stone ballast, on a length of 100 feet. The width of the new work is 12 feet and its average height 10 feet. Two courses of face-timbers and cross-ties at the shore end of the pier were renewed on a length of 550 feet and new floor stringers, flooring and snubbing posts put in. Some 12" x 12" timbers in the western face of the structure, at its outer end, which had been broken by the ice, were renewed, and this face was sheathed with 6 inch maple 15 feet long on a distance of 200 feet.

The work was done by day labour, during the months of July and August, at a cost of \$3,505.75.

The total amount expended on this work is \$67,543.65, as follows —

Construction.....	\$61,617 15
Repairs.....	5,926 50
<b>Total.....</b>	<b>\$67,543 65</b>



## BEAUPORT.

The village of Beauport in the county of Quebec, is situated at the mouth of the river of the same name on the north shore of the River St. Lawrence, two miles below the city of Quebec. It contains two large flour and grist mills, nail, match, grindstone, cement, lime and cotton factories, and the building stone, of which there are extensive quarries, is in great demand, large quantities of it being annually shipped. Spring tides rise 21 feet, neap tides 13 feet. At low water spring tides, the water of the St. Lawrence recede about 3,700 feet from the mouth of the Beauport River.

In 1888 a wharf 200 feet long, 25 feet wide, and eight feet high at its outer end, situated on the west shore of the Beauport River at its mouth, was purchased from Mr. Edouard Caron for the sum of \$800. The purchase was made subject to the structure being thoroughly repaired and raised three feet by the vendor. The work was completed to the satisfaction of the department in 1890 when the total amount paid out, including legal expenses, was \$932.07. The wharf was then 11 feet high at its outer end which stood in 10-80 feet of water at high water spring tides. In 1890 the filling of the wharf with stone ballast was completed and its approach raised at a cost of \$300. In order to provide increased shipping accommodation a close-faced cribwork extension, 121 feet long and 30 feet wide was built to the old work during the past year, at a total cost of \$3,352.58. The new work is 14 feet high for half its width and from seven to nine feet high for the other half, and affords an increased depth of six inches of water at its outer end at high water spring tides. Its foundation has been carried down to a depth of five feet below the level of the beach in order to render dredging along its face possible should it be required. The total amount expended on this work is \$4,584.65.

## BELŒIL (GUARD PIERS).

Belœil is a post village in Verchères county, on the north side of the Richelieu River, with a station on the Grand Trunk railway, 21 miles north-east of Montreal. It has an express office, one store, two hotels, one saw mill and the works of the Hamilton Powder Co. Population 400. The Richelieu River leaves Lake Champlain at its northern extremity and after a course of 80 miles enters the St. Lawrence at Sorel. It is broader and more rapid in the former than the latter part of its course, and near its centre it expands into the Basin of Chambly. The Richelieu forms an important part of the navigation between the St. Lawrence and the Hudson River.

South of the Grand Trunk railway bridge which crosses the river at Belœil, the Government built a number of piers and booms on both sides of the channel to facilitate the passage of steamers and barges coming down the rapid current of the river and going through the narrow passage of the draw-bridge, and to prevent them from being carried out into shallow water. There are eight piers or four on each side of the channel, distant from 80 to 100 feet from one another.

From 1885 until 1888 some slight repairs were made to the booms at a cost of \$353.43. In 1890-91 three of the piers were rebuilt from the water line and some slight repairs were made to the booms at a cost of \$1,500.35. In 1891-92 two other piers were rebuilt from the water line at a cost of \$1,193.38. In 1895-96 some slight repairs were made to the booms at a cost of \$144.79.

In 1896-97 it was found that the guide piers on the west side of the river,—four in number—built many years ago, were in such bad condition that they could not properly be repaired, and an entirely new line of guide works was adopted. It was decided to build a solid cribwork wall from the Grand Trunk railway pile abutment upward, following the line of a 15° curve (about the natural curve of the shore) for a distance of 337 feet; to remove the four old piers and booms, and to dredge a wider channel for the free passage of boats. During the year some dredging was done amounting to \$730.45 and \$2,170.12 was expended in procuring stone, iron, &c., required for the construction of the cribwork. In 1897-98 the sum of \$5,974.28 was expen-

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ded in building the cribwork up to an elevation of 15 feet. This work when completed will be 337 feet long, 15 feet wide and 20 feet high.

The total amount expended on this channel since 1885, is \$12,066.80 as follows:—

Repairs and reconstruction of mooring piers.....	\$ 3,191 95
Construction of cribwork guide wall.....	8,874 85
Total.....	12,066 80

### BERTHIER (EN HAUT).

Berthier (en haut), in the county of the same name, is a town of 1,600 inhabitants situate on the north shore of the St. Lawrence, 45 miles below Montréal, and opposite the town of Sorel.

*Construction.*—In order to protect the village and wharfs against the action of drift ice, the sum of \$2,000 was appropriated by Parliament in 1886 for the construction of an ice pier which was completed in 1887, at a total cost of \$1,611.04. Being found too low, it was raised three feet in 1888 at a cost of \$99.97.

Sufficient protection was not, however, afforded by the work to prevent considerable damage being done by the ice during the spring floods of 1896. A new ice pier 25 by 30 feet high, was therefore constructed in 1897 on the edge of the beach, at the upper end of the town, at a total cost of \$2,584.16. The piers have answered all expectations.

*Repairs.*—In 1892, minor repairs were effected to the ice pier built in 1887, at a cost of \$13.50. In 1897 attention was called to the fact that the only protection the lower part of the town had against ice shoves, was a low ice breaker at the head of the Richelieu and Ontario Navigation company's wharf. The ice breaker being very much out of repair, and the formation of the shore such that the construction of a new pier, in an equally good position would have been costly and an impediment to navigation, permission was obtained from the company to repair and increase the height of their work. This was done at a cost of \$733.29.

Minor repairs were last year effected to the ice pier built in 1897 at a cost of \$8.50.

The total amount expended on the above mentioned works is \$5,050.46, as follows:

Construction.....	\$4,295 17
Repairs.....	755 29
Total.....	\$5,050 46

### BERTHIER (EN BAS).

The village of Berthier, in the county of Montmagny, is situate on the south shore of the St. Lawrence, 24½ miles below Quebec. Spring tides rise 20 feet, neap tides 13 feet.

*Construction.*—A landing pier was completed at this place in 1853 at a cost of \$37,724.14 and the sum of \$1,760 expended for repairs up to the 30th June, 1867. The pier, which was built of cribwork filled with stone ballast, was 466 feet long, of a uniform width of 32 feet, with the exception of its outer 57 feet which was 60 feet wide and 34 feet high at its outer end, which stands in from six to eleven feet of water at low water spring tides. In 1883 an appropriation was made for the construction of an extension 100 feet long and 30 feet wide with an arm 80 feet long and 30 feet wide standing in a depth of 14 feet at low water spring tides. It was built by contract and completed in 1886 at a total cost of \$11,310.39.

*Repairs.*—In 1877-78 the pier was thoroughly repaired; some of the face-timbers and ties which were decayed were renewed, and the whole roadway was planked over to prevent the broken stones of which it was made from being washed out by the heavy



seas which frequently broke over the pier. The total expenditure for repairs to this work since Confederation was then \$9,024.15. Owing, however, to the age of the main portion of the work, constant repairs were required, and up to 1896, a further sum of \$3,656.14 was expended in renewing portions of the flooring, cap pieces, corner sheathing and moving parts, and for the reconstruction of the moveable slip which was broken during the fall of 1889.

During the past year, portions of the flooring were renewed, 250 planks being used for the work. The repairs were done during the month of August at a cost of \$98.15.

The total amount expended on this work is \$61,812.97 as follows:—

Construction—Prior to Confederation.....	\$37,724 14
Since                   “ .....	11,310 39
Repairs.....	12,778 44
Total.....	<hr/> \$61,812 97

## BIC.

Bic is an important village and summer resort, in the county of Rimouski, on the south shore of the St. Lawrence, 170 miles below Quebec. It contains a number of flour, saw, and carding mills and two cheese factories. Spring tides rise  $14\frac{1}{2}$  feet, neap tides 18.

*Construction.*—In 1884 it was decided to build a landing pier to accommodate the extensive local trade of the village. The work was carried out by day labour and completed in 1887 at a cost of \$15,931.08. It is situate to the eastward of a group of islets which lie at the mouth of the Bic River, and is 1,120 feet long over all, of a uniform width of 20 feet apart from its outer 85 feet which is 30 feet wide, and 15 feet high at its outer end, which stands in 12 feet of water at high water spring tides, and dries at low water of both spring and neap tides. The pier consists of 22 cribs placed 25 feet apart connected with platforms. The shore end crib is 35 feet long and 20 feet wide, the two outer ones which constitute the head of the pier, are 30 feet square and the remaining nineteen are 25 feet long and 20 feet wide. An opening 50 feet wide has been left between the second and third cribs from shore, in order not to interfere with a branch channel of the river. The cribs are substantially built of close-faced cribwork, with 12 x 12 inch timber, and filled with stone ballast.

*Repairs.*—Minor repairs were effected to the work in 1894 at a cost of \$197.50, and in 1896 a further amount of \$587.22 was expended in renewing portions of the flooring, cap pieces and stringers which had become decayed. During the past year, 16,215 square feet of the flooring out of a total area of 22,952 square feet were renewed with 3-inch spruce deals; also 1,500 feet of 8 x 8 inch capping. The floor stringers were raised and strengthened where required, placing upright posts under them, and a crib nine feet long 20 feet wide and six feet high with vertical posts to support the flooring, was built in the centre of the 50 foot opening originally left in the shore end of the work. These repairs were effected by day labour at a cost of \$1,248.85.

The expenditure on this work is \$17,964.65, as follows:—

Construction.....	\$15,931 08
Repairs.....	2,033 57
Total.....	<hr/> \$17,964 65

## BOUCHERVILLE.

The village of Boucherville is situate on the south shore of the St. Lawrence, in the county of Chambly, 9 miles below Montreal.

*Construction.*—During the winter of 1888-89 the Boucherville Navigation company built a block  $54\frac{1}{2}$  feet long and 23 feet wide, with a breakwater 10 feet long at the

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upper end, at a distance of 175 feet from the shore. The block was handed over by the company to the municipality of Boucherville in the summer of 1890. During the winter of the same year the department was asked to connect the block with the shore, and an examination of the locality was made at a cost of \$20.85. In 1891 an approach of solid cribwork, 175 feet long and 24 feet wide, was built at a cost of \$3,663.68.

*Repairs.*—During the last year the sum of \$1,079.19 was expended for general repairs. The upper or western face of the work, the breakwater and the outer face of the head of the pier were sheathed down to low water line, with 3-inch hemlock deals, the flooring of the slip was renewed, and the corners of the head of the pier and of the slip, the slanting face of the breakwater and the angle formed by the flooring and face-timbers along the whole length of the western face of the approach were entirely covered with boiler plate  $\frac{3}{8}$  inch in thickness.

The total amount expended on this work is \$4,763.72, as follows :—

Construction . . . . .	\$3,684 53
Repairs . . . . .	1,079 19
	<hr/>
Total . . . . .	\$4,763 72

### CACOUNA.

Cacouna, one of the favourite summer resorts of Canada, is an important village in the county of Témiscouata, on the south shore of the river St. Lawrence, 120 miles below Quebec. Spring tides rise  $19\frac{1}{2}$  feet, neap tides  $9\frac{1}{2}$  feet.

In order to accommodate the trade of the village and surrounding localities, it was decided in 1891 to commence the construction of a landing pier off Indian Point and to add yearly to its length until a depth of about 13 feet of water, at high water spring tides, would be reached. To more promptly provide the needed landing accommodation the construction of the pier was commenced by day labour, during the same year, at its outer end by the building of an isolated block 103 feet long, 24 feet wide at the top and 27 feet wide at the base, and respectively 17 feet 3 inches and  $16\frac{1}{2}$  feet high at the outer and inner ends. The work, which was built of open-faced cribwork, with 12 by 12 inch timber and sheathed on all its faces with 3-inch spruce deals, was completed in 1894 at a cost of \$6,828.03. Its head stands in 12 feet 9 inches of water at high water spring tides, and is about midway between high and low water lines of spring tides, about 875 feet distant from the former. In 1895 an extension shorewards 60 feet long, 22 feet wide and 16 feet high at its inner end, was built in the same manner as the main block at a cost of \$2,017.34.

During the past year a further extension towards Indian Point, 143 feet 8 inches long, 22 feet wide and 15 feet high at its inner end, built of close-faced cribwork and sheathed on all faces with 3-inch spruce deals, was added to the structure at a cost of \$3,679. Materials, timber and iron, worth \$1,300 were left on hand and will be used in the extension to be built next year. The work is now 306 feet 8 inches long, which leaves a length of about 568 feet yet to be built to connect it with Indian Point.

The total amount expended on the work since it was commenced in 1891 is \$13,824.37.

### CAP À L'AIGLE.

The village of Cap à l'Aigle is on the north shore of the River St. Lawrence, in the county of Charlevoix, 93 miles east of Quebec and three miles below Murray Bay. Spring tides rise 20 feet, neap tides 13 feet.

*Construction.*—During the seasons of 1881 and 1882 a landing pier, 160 feet long and 35 feet wide, with a depth of water of 18 feet at its outer end, at low water spring tides, was built to accommodate the local trade at a cost of \$2,946.26. In 1883 a combined waiting-room and freight shed was erected on the pier at a cost of \$250, and in 1884 fenders and moving parts were placed on the structure, the amount expended



being \$345. In order to meet the requirements of the fast increasing traffic of the locality, which is without railway communication, and to provide increased accommodation to the steamers and numerous schooners calling at the pier, an extension 50 feet long, 40 feet wide, and of an average height of 42 feet, was built by day labour during the past year, along its eastern face at a cost of \$4,754.44. The pier is now 160 feet long and 35 feet wide with an arm 50 feet long and 40 feet wide. The depth of water along its outer face is 18 feet at low water spring tides. It is entirely built of cribwork filled with stone ballast and sheathed with rock elm or maple six inches in thickness.

*Repairs.*—Owing to its exposed situation the pier has frequently been damaged by ice, and up to 1894 a sum of \$1,270.13 had been expended for repairs. In 1897 it was again thoroughly repaired at a cost of \$816.49.

The total amount expended on this work is \$10,382.32, as follows:—

Construction.....	\$ 8,295 70
Repairs ....	2,086 62
Total.....	<hr/> \$10,382 32

#### CAP SANTÉ.

The village of Cap Santé, the chief town of the county of Portneuf, is situate on the north shore of the St. Lawrence, five miles below Portneuf, and 31 miles above Quebec. Spring tides rise  $14\frac{1}{2}$  feet, neap tides  $8\frac{1}{2}$  feet. At neap tides the boats can only approach the landing pier when the water has risen to the height of 7 feet 9 inches, and even then only with danger, owing to the numerous boulders which are strewn along the foreshore of the river. The boulders form part of a reef which extends along the line of low water at a distance of about 1,100 feet from the head of the pier. The work of blasting the most dangerous boulder from the channel leading to the pier was commenced in 1889 when a sum of \$252.43 was expended. The channel was further improved in 1890 at a cost of \$500.85. During the last year a number of other boulders was blasted and removed at a cost of \$423.49.

The total amount expended at this place is \$1,176.77.

#### CHICOUTIMI.

The town of Chicoutimi, in the county of the same name, is situate on the south shore of the Saguenay River,  $71\frac{1}{2}$  miles above Tadousac, and at the head of navigation. The Richelieu and Ontario Navigation company's boats calls two to six times a week at the Chicoutimi pier, during the season of navigation, with passengers, freight and mails.

At the mouth of the River Chicoutimi, about one mile above the pier, there is an extensive lumbering establishment belonging to the Messrs. Price who export large quantities of sawed lumber, laths, shingles, &c., to Europe and elsewhere, in ocean vessels and large schooners which ascend the Saguenay to the town. Spring tides rise 15 feet, neap tides 8 feet.

*Construction.*—The landing pier was commenced in 1873 by the St. Lawrence Tow Boat company and completed by the Dominion Government, to whom it was handed over in 1874, at a cost of \$14,193.40. From 1874 to 1882 inclusively, it was extended and improved at a total cost of \$2,823.76. The pier was then 282 feet long, and consisted of an approach 248 feet long and 30 feet wide and of a head block 34 feet long and 127 feet wide forming two wings respectively 70 and 27 feet wide. On the upper or 70 foot wing was a combined waiting-room and office 20 feet square.

The depth of water at the end of the pier, which was originally 10 feet at low water spring tides, was then reduced to 7 feet by the accumulation of slabs and sawdust from the mills at the mouth of the Chicoutimi River.

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In 1883 the shore end portion of the approach on a length of 38 feet was embedded in an embankment upon which the station and sheds of the Chicoutimi branch of the Lake St. John Railway are now erected. The length of the approach was thereby reduced to 210 feet. In 1884 the approach was widened 70 feet by filling in with slabs the whole space, 210 feet in length, between the upper or 70 foot wing and the shore, and a store house 40 feet long and 24 feet wide was erected on this extension at a total cost of \$2,145.84. The filling was not, however, carried up to the level of the top of the pier until 1885, when the extension was floored in a manner similar to the rest of the work. A separate waiting-room was also erected on the lower or 27 foot wing. The amount expended was \$2,042.11. In 1890 a cribwork retaining wall 14 feet wide was commenced along the slab filling built in 1884 and the flooring was repaired where required at a total cost of \$1,005.81. In 1891 the cribwork retaining wall was completed, a shed 28 x 20 feet built at the southern end of the pier and the flooring was repaired at various places at a cost of \$1,802.70. In 1897 the pier was again widened by the addition of cribwork 30 feet wide along its lower or eastern face, from the lower or 27 foot wing to shore, a distance of 210 feet. The cribwork was fully ballasted and floored with 3-inch tamarack planks, and 25 fenders were placed along its face; the pier was also sheathed for a length of 50 feet along its northern face in order to complete the sheathing all around the work. The total expenditure incurred was \$4,992.96.

As now completed the pier is 245 feet long, and 130 feet wide. It is 29 feet high above the bottom of the river at its outer end, which stands in about eight feet of water at low water spring tides.

*Repairs.*—In 1883 and 1886 minor repairs were effected to the flooring, &c., at an aggregate cost of \$288.55. In 1887 a slip was built at the outer end of the pier, the waiting-room was painted and general repairs performed at a cost of \$1,390.35. In 1889 the flooring of the pier was almost entirely renewed and six fenders, 14 inches square, were placed along its outer face at a cost of \$1,631.65. In 1892 and 1893 the flooring of the pier was again completely renewed on a length of 210 feet and a width of 110 feet with red spruce planks five inches in thickness; the east side of the structure was raised 18 inches; the waiting-room was painted both inside and outside, and two mooring posts were renewed. The expenditure incurred during the two years was \$3,024.04. In 1894 a sum of \$1,999.60 was expended for the construction of a moveable slip and the purchase of two crab winches to raise it. During the years 1895 and 1896 a portion of the outer face and the whole of the eastern face of the structure were resheathed with red spruce six inches in thickness, and the portion of the flooring not completed in 1893 was laid. Expenditure during the two years, \$3,991.88. During the fiscal year a sum of \$239.79 was expended on minor repairs to the flooring, sheds and waiting-room.

The total expenditure on this work is \$41,572.44 and may be subdivided as follows :—

Construction.....	\$29,006 58
Repairs.....	12,565 86
Total.....	\$41,572 44

### COTEAU DU LAC.

The village of Coteau du Lac, in the county of Soulanges, is situate on the north shore of the St. Lawrence, thirty-six miles and a half above Montreal.

*Construction.*—In 1888 the construction of a landing pier was commenced, and was completed in 1889 at a cost of \$6,918.71. It consists of a head block of solid cribwork, 101 feet long and 21 feet wide, with a cribwork extension, 40 feet long and 47 feet wide, built along the middle of its inner face, and of a block and span approach 75 feet long and 26 feet wide. The outer face of the head block is 15 feet high above the bottom of the river and stands in 10 feet of water at ordinary low water. Across



the inner end of the extension to the head block is built a freight shed of the full width of the extension and 20 feet long, with a passageway for vehicles through its centre.

*Repairs.*—During the year 1894-95, sundry repairs were effected to the structure at a cost of \$249.99. In 1896-97 most of the floor stringers and the whole flooring of the pier, which were decayed, were removed, new floor stringers were put in and the whole structure was refloored with 4-inch hemlock planks at a cost of \$694.58.

In 1897-98 sundry repairs were made to the corner sheathing, capping, etc., at a cost of \$200.41.

The total expenditure on this work is \$8,063.69 as follows:—

Construction.....	\$6,918 71
Repairs.....	1,144 98
Total.....	<hr/> \$8,063 69

#### COTEAU LANDING.

Coteau Landing, the chef-lieu of the county of Soulanges, is situate on the north shore of the St. Lawrence, at the foot of Lake St. Francis, thirty-six miles above Montreal, and two miles from Coteau station on the Grand Trunk railway.

*Construction.*—In 1871, a mooring pier was built by the department at a distance of 880 feet from shore, and in February, 1872, a contract was entered into for the enlargement of the pier and its connection with the shore by a block and span approach. The work was completed in October, 1875, at a cost of \$11,453.88. It consists of a head block 249 feet long and 24 feet wide, with an ice breaker 30 feet long at its upstream end, and of an approach 880 feet long and 12 feet wide except for a length of 92 feet near the head block where it is 24 feet wide, to give vehicles room to pass. The head block, and the portion of the approach 92 feet in length immediately adjoining, are built of open-face cribwork filled with stone ballast, and the remaining portion, 788 feet in length of the approach, is a block and span structure. The outer face of the head block is 18 feet high above the bottom of the river and stands in 12 feet of water at low water.

*Repairs.*—Minor repairs were effected to the pier in 1882 at a cost of \$8.00. The structure was considerably damaged by ice in the spring of 1896 and was thoroughly repaired during the same year at a cost of \$1,544.42. In 1889 the department commenced the reconstruction of the block and span portion of the approach, which was completed during the year 1889-90 at a cost of \$4,005.91. The new approach has a general width of 12 feet, with two sidings 115 feet long and 12 feet wide for the passing of teams. In 1891 the reconstruction of the head block 279 feet long, 24 feet wide was commenced, and was completed in 1892 at a cost of \$5,658.42. In 1897 the wharf was again thoroughly repaired. Some of the stringers were renewed and the whole of the approach, and a portion of the head block were refloored with hemlock planks 4 inches in thickness at a cost of \$1,797.03. During the last year the outer face of the head block was resheathed with 6-inch hemlock at a cost of \$314.20.

The total amount expended on this work is \$24,781.86 as follows:—

Construction.....	\$11,453 88
Repairs and construction.....	13,327 98
Total.....	<hr/> \$24,781 86

#### GATINEAU RIVER.

(*Protection to east bank.*)

The Gatineau, a river of Quebec, rises in a large lake in lat. 48° N., long. 75° 30' W., flows south, entering the Ottawa river near Hull, is 400 miles in length, draining

## Department of Public Works.

an area of 9000 square miles and is navigable for canoes for upwards of 300 miles. The timber berths on this river and its tributaries are very extensive. About 280,000 saw logs are floated down annually.

In 1890-91, it was brought to the attention of the department that the east bank of the river Gatineau, below the Canadian Pacific railway bridge (which is about two miles above the outlet) was being rapidly washed away by the action of the current, and it was feared that if nothing were done to check this, that the water in the spring would enter into a coulee which at some points was only five feet from the river, and damage and perhaps destroy a great portion of the village of Gatineau Point. Some protection work was done without delay by the construction of a retaining wall, about one mile above the Gatineau Point church, to stop any further encroachment on the river bank, along which runs the public highway. This wall is 340 feet in length and is built of pile work. The space between the front row of piles and the bank is filled with fascines and stones. The cost of this work was \$1,506.96. In 1894-95 a further expenditure of \$1,288.10 was made to protect another portion of the eastern bank about 800 feet below the former work. It was also built of pile work, 320 feet in length and the space between it and the bank was filled with fascines, stones and earth.

In 1897-98 it was found necessary to expend a further sum of \$3,989.95 in protecting the eastern bank, for a distance of 340 feet above the bridge and 2,900 feet below it, in order to stop once for all this continual erosion of the bank which at some places has washed it away for a distance of 200 feet inward. This protection consisted in the construction of pile work walls as already described for a length of 240 feet above the Canadian Pacific railway bridge and in different lengths, making a total of 1681 feet, below the bridge. These works have proved sufficient to check any further encroachment.

The total amount expended on this work is as follows :—

Fiscal year	1890-91.....	\$1,506 96
do	1894-95.....	1,288 10
do	1897-98.....	3,989 95
Total.....		<hr/> \$6,785 01

### GEORGEVILLE WHARF.

Georgeville is a village on the eastern side of Lake Memphremagog, in the county of Stanstead, and 11 miles to the southward of the village of Magog at the head of the Lake. It is a port of entry of considerable importance, and all steamers, plying between Magog and Newport (State of Vermont U.S.A.), call at the wharf.

This landing pier was built by subscriptions from the several steamboat companies which kept it in repair until 1888, when its control was assumed by the Government. At that time it had a total length of 210 feet and a breadth of  $18\frac{1}{2}$  feet, and was supported on six cribs ; a wing of say 56 feet by 12 feet had been added at the outer end where the depth available at ordinary low water was about  $9\frac{1}{2}$  feet. As originally completed it stood 18 inches above extreme high water, but owing to a permanent rise in the lake, caused by the construction of a dam at Magog, its top was till 1888 level with the surface of the water, the consequence being that during periods of high water or when the wind blew strongly from the south, the paddles of steamers fouled with the pier, and received more or less damage. The top of the wharf including the arm down to low water mark, was moved bodily to the west by ice in the spring of 1888 and many timbers were either completely torn away or broken, the platforms sustaining also considerable damage.

During the year 1888-89 some urgent repairs were made : the top timbers of every crib excepting the two shore ones, being renewed as well as the platforms and flooring over the whole surface of the wharf at a cost of \$661.43. In 1889-90 the sum of \$1,995.27 was expended for the construction of two cribs 12 feet wide, 37 feet long and 16 feet high, which were set in front of and firmly bound to the two which actually



formed the head of the wharf, to increase its resistance against ice shoves. The whole wharf was rebuilt from low water mark and raised two feet higher than its actual level. In the course of 1895 the approach to the landing block being defective the municipality removed the flooring and platforms between the shore and the fifth pier and filled the whole with a solid earth and stone embankment 160 feet long. In 1897-98 some stringers were renewed and the whole outer block was replanked. A new waiting room was also built at a cost of \$678.96.

The cost of repairs made to this wharf may be summarized as follows :

1888-89—Urgent repairs.....	\$ 661 43
1889-90—Construction and repairs.....	1,995 27
1897-98—Repairs to outer block....	678 96
Total.....	<hr/> \$ 3,335 66

#### GRAND-PABOS.

The harbour of Grand-Pabos, in the county of Gaspé, is situate at the mouth of the river of the same name on the north shore of Baie des Chaleurs, 30 miles west of Percé, and about midway between Cape Despair and Pointe Maquereau.

In 1885 the department commenced the improvement of the harbour, which lies within the mouth of the river, by the removal of dangerous rocks which obstructed its entrance. This work was continued in 1887 and 1889, when a sum of \$2,582.93 was expended. In 1890 a combined training pier and breakwater of close-faced cribwork 215 feet long, 24 feet wide and about 10 feet high along its western face was built on a reef which extends in an easterly direction off the west shore of the river into the bay. The amount expended was \$2,906.95. In 1893-94 the pier was extended to shore, the dimensions of the new work being: length 120 feet, width 21 feet, average height 11 feet. It was built of close-faced cribwork and completed during the year with the exception of the flooring, outside sheathing and some ballasting at a cost of \$1,999.53. Work was resumed on the extension in 1894-95 and the portions unfinished were completed. Some dangerous rocks lying in mid-channel of the river and along the face of the work were also removed, the amount expended being \$1,558.99.

The training pier, which is now 335 feet long, has confined the river waters into one channel about 75 feet wide, seven feet deep at low water spring tides, and practically clear of all obstructions. A few jutting points of rock will, however, have to be removed to make it perfectly safe at all times of tide.

*Repairs.*—In 1896-97, a sum of \$500 was applied in sheathing with spruce flatted to 10 inches in thickness, a length of 200 feet of the inner face of the training pier which had been damaged by ice. The repairs commenced in 1896-97 were completed during the past year at a cost of \$799.15. The seaward face of the pier for a length of 309 feet, and its outer end, were sheathed with spruce flatted to eight inches in thickness and from 10½ to 15 feet in length. The outer end of the work on a length of 150 feet was raised about 15 inches, and new stringers and flooring put in.

The total amount expended on this work since it was undertaken in 1885 is \$10,347.55, as follows :—

Improvement of channel .....	\$ 2,582 93
Construction of training pier.....	6,465 47
Repairs to do .....	1,299 15
Total .....	<hr/> \$10,347 55

#### ILE AUX GRUES.

Ile aux Grues, or Crane Island, with a population of about 640, is an island of 7,873 acres in extent which lies in the St. Lawrence, opposite Cape St. Ignace, 30 miles below Quebec. Spring tides rise 18 feet. Neap tides, 10 feet.

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*Construction.*—In 1862 an isolated block and lighthouse were erected near the upper end of the island, in the harbour of Pointe aux Pins, at a cost of \$10,334.42. The block was placed about 140 feet above low water line of spring tides and was used as a landing for passengers and freight during the period of high water. To enable vessels to call and land passengers and freight at low water, a contract was entered into in November, 1881, for the construction of a pier 171 feet long, 25 feet wide at its inner end, 35 feet wide at its head, and 27 feet high, projecting from the block into four feet of water at low water spring tides. The work was completed in 1883 at a cost of \$11,716.17, but as it was not connected with the shore the accommodation it afforded to passengers and freight was so poor that it was decided to complete the structure. On the 30th January, 1884, a contract was therefore entered into for the construction of a cribwork extension to shore, 468 feet long, 25 feet wide and from seven to 15 feet high, which was completed in 1885 at a cost of \$9,848.27. The right of way from the shore end of the pier to the main road which had not been secured was purchased in 1894 at a cost of \$200, and in 1895 a sum of \$45.55 was paid for professional services in connection with the purchase.

The pier is now 639 feet long, of a uniform width of 25 feet apart from its outer 75 feet which is 35 feet wide, and 27 feet high at its head which stands in four feet of water at low water spring tides. A portion of the block built in 1862 still remains, on the eastern side of the present pier. The whole work is built of close-faced cribwork, with square timber 12 by 12 inches dimensions, and is filled with stone ballast. Its outer end and corners, and the inner corner of the portion 35 feet wide are sheathed with timber eight inches in thickness. The cross-ties and longitudinals are round logs not less than 14 inches diameter at the small end.

*Repairs.*—No repairs were effected to the pier up to the past year; but, during the month of August, 1898, a portion of the flooring which had become dangerous was renewed, a path four planks wide was laid over the old flooring on the whole length of the structure; two ladders were placed, one on each side of its outer end, and a snubbing post renewed. The work was done by day labour at a cost of \$105.58.

The total amount expended on the work is \$32,249.99, made up as follows :—

Construction, before Confederation .....	\$10,334 42
do since do .....	21,809 99
Repairs .....	105 58
Total .....	<hr/> \$32,249 99

### ISLE PERROT—WHARFS.

Isle Perrot, a post village in the county of Vaudreuil, one mile from Ste. Ann's, is situate on the south side of the island of the same name and has a Roman Catholic church, for a population 860. Both the Grand Trunk and the Canadian Pacific railways cross the northern end of the island, but the nearest stations to the village are Vaudreuil and Ste. Anne de Bellevue. The island is in the St. Lawrence, south-west of the island of Montreal, between Lake of Two Mountains and Lake St. Louis and is about seven miles long.

*Isle Perrot, South Side.*—In 1886-87 a contract was entered into with Mr. D. O'Brien for the construction of a pier of cribwork consisting of a block, 120 feet long, 30 feet wide, in a depth of eight feet of water at a distance of 581 feet from the shore. It was completed in the year 1887-88 at a cost of \$5,264.26. During the years 1888-89 and 1889-90 the sum of \$7,156.29 was expended in building an approach 16 feet wide from the shore to the outer block. This approach consists of ten cribs four of which are 12 feet and six 20 feet in width and connected at top by timber spans of stringers and planking. The shore abutment has a length of 184 feet and its top is covered with a layer of gravel. A freight and shelter shed 16



feet by 20 feet has been erected and its cost is included in the above amount. Last year, 1896-97, a sum of \$395.93 was expended in making general repairs to the wharf.

The total cost of this work is as follows :—

Cost of construction.....	\$12,420 55
Repairs.....	395 93
Total.....	<hr/> \$12,816 48

*Isle Perrot, North Side.*—In 1897-98 a small wharf with a right of way on the north side of the island was purchased from Mr. Joseph Leduc for the purpose of providing a convenient landing on the Ottawa River shore. This right of way is 400 feet long and extends from the public road to the wharf, the first 355 feet having a width of 30 feet and the remainder near the river a width of 100 feet. The wharf is close to and parallel with the shore, and is 20 feet wide by 52 feet long, at the head, being inadequate to the requirements of the traffic and in a dilapidated condition; an outer block was built close to the old wharf with a landing face of 80 feet and a width of 20 feet. This work, done by day labour, was commenced in June, 1898, and was not completed at the end of the fiscal year. It is built of closefaced timbers to a height of 19 feet and is sunk in 13 feet water.

A good road on the site of the right of way was also built from the public road to the wharf.

Amount expended.....	\$841 98
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#### ISLE VERTE.

The village of Isle Verte, the chief town of the county of Témiscouata, is situated on the south shore of the St. Lawrence, 16 miles below Rivière du Loup and 131 miles east of Quebec. It has a population of 4,500 and contains flour, carding and saw mills, and carriage and threshing machine factories. Spring tides rise 19 feet. Neap tides, 12 feet.

*Construction.*—In 1888 the construction of a landing pier was commenced by the building of an isolated block 50 feet long, 40 feet wide and 20 feet high at a distance of 1,300 feet from high water line of ordinary spring tides. The sum expended was \$3,606.30. The approach was commenced in 1889 and completed in 1893 at a cost of \$15,991.50. The pier is now 1,307 feet long, and consists of an open-faced cribwork approach 1,257 feet long, 21 feet wide, of an average height of seven feet, and of a head block 50 feet long and 40 feet wide. The head of the pier, which is 18 feet high above the bottom of the river, is dry at low water spring tides, but stands in 16 feet of water at high water. The top of the pier is two feet above high water spring tides.

*Repairs.*—In 1894, the north and east sides of the head block were sheathed with rock elm four inches in thickness, and strengthened by three iron straps four inches wide and  $\frac{5}{8}$  inch in thickness. The outer block was also floored and four ladders were fixed to its sides; expenditure \$998.28. In 1895 the south and west sides of the head block were sheathed with rock elm, and other work performed at a cost of \$903.02. Last year the flooring of the approach at its inner end, was entirely renewed on a length of 350 feet and the rest repaired. The middle pathway, four planks wide, was renewed from end to end of the approach, the cap pieces were partly renewed and the snubbing posts were painted. The work was performed by day labour at a cost of \$600.

The total expenditure on this work is \$22,099.10.

Construction.....	\$19,597 80
Repairs.....	2,501 30
Total .....	<hr/> \$22,099 10

# Department of Public Works.

## KAMOURASKA.

The village of Kamouraska is a favourite summer resort situate on the south shore of the St. Lawrence, in the county of the same name, 90 miles below Quebec. Spring tides rise 17 feet. Neap tides, 10 feet.

*Construction.*—In 1887 a landing pier, 180 feet long, 42 feet wide and 15 feet high at its outer end was purchased for the sum of \$1,000, thoroughly repaired, and portions of it were rebuilt at a cost of \$2,818.37. In 1890 a close-faced cribwork extension 100 feet long, 25 feet wide, and 16½ feet high at its outer end, was built at a cost of \$2,855.99. The pier is now 280 feet long, it is dry at low water, but at high water of ordinary spring tides, a depth of 12 feet is available along the end and sides of the extension built in 1890. The top of the work stands 3½ feet above ordinary, and two feet above extreme high water spring tides.

*Repairs.*—In 1891, the outer portion of the eastern face of the old work purchased in 1884, was demolished and rebuilt with an inclined slip 76 feet long and 17 feet wide at a cost of \$898.63. In 1897 the whole western face of the same work, 180 feet in length, was taken down and rebuilt for a width of 12 feet. The work was performed by day labour at a cost of \$995.62. During the past year the inner portion of the eastern face of the old work, 110 feet in length, not rebuilt in 1891, was taken down and rebuilt for a height of five feet, the floor stringers and flooring were renewed on a length of 80 feet, both faces of the structure were sheathed with 3-inch deals on a total length of 490 feet, 48 cubic yards of stone ballast were placed in the slip, three snubbing posts were renewed and four ladders were placed, two on each side of the structure. The work was done by day labour at a cost of \$736.63.

The total amount expended on the work is as follows :—

Purchase of the work.....	\$1,000 00
Construction and improvements .....	5,674 36
Repairs .....	2,630 88
Total .....	<hr/> \$9,305 24

## LAKE MEGANTIC—PIERS.

Lake Megantic, is about 73 miles S.E. of Sherbrooke ; length, 12 miles ; average breadth, two to four miles, with a coast line of over 36 miles. This lake and the rivers that run into it, form the head waters of the Chaudiere River.

From the year 1882 to 1886, six wharfs were built on the shores of this lake to accommodate the trade of the several localities at St. Agnes, Lourdes, Flint, Victoria Bay, Ditchfield, Lake Megantic and Piopolis.

*St. Agnes* (late Morinville) is situated at the mouth of the Chaudiere River in the county of Beauce. The construction of the wharf was commenced in the year 1882-83 and completed during 1883-84 at a cost of \$5,876.78.

In 1884-85 some slight repairs were made amounting to	103 50
1886-87           “                   “                   “	59 00
1889-90           “                   “                   “	209 68
1890-91           “                   “                   “	77 25
1891-92           “                   “                   “	349 80
1892-93           “                   “                   “	300 00
1893-94           “                   “                   “	300 19
Total.....	<hr/> \$1,399 42

The total amount expended on this work is \$7,276.20 as follows :—

Construction.....	\$5,876 78
Repairs and improvements.....	1,399 42
Total.....	<hr/> \$7,276 20



*Lourdes* is situated on the south-eastern corner of Lake Megantic, in the county of Compton. In 1883-84 a small wharf 190 feet long was built at a cost of \$1,194.71. In 1889-90 some slight repairs were made at a cost of \$169.68. In 1890-91 it was damaged by an ice shove and was repaired at a cost of \$500.

The total amount expended on this work is \$1,864.39 as follows :—

Construction.....	\$1,194 71
Repairs, etc.....	669 68
Total.....	\$1,864 39

*Flint's wharf* was built in 1884-85 at a cost of \$1,712.41. In 1886-87 it was damaged by ice and was repaired at a cost of \$323.78. In 1889-90 some small repairs were made at a cost of \$156.26. The total amount expended on this work is \$2,192.45, as follows :—

Construction.....	\$1,712 41
Repairs.....	480 04
Total.....	\$2,192.45

*Victoria Bay* is situate in the township of North Marston in the county of Compton. In 1885-86 a small pier was built at this place for the accommodation of the local trade at a cost of \$854.20 and some slight repairs were made to it in 1889-90 at a cost of \$80.00.

Construction.....	\$854 20
Repairs.....	80 00
Total.....	\$934 20

*Ditchfield*.—A small pier was built at this place in 1886-87 at a cost of \$1,484.75

*Piopolis* is a post village in Compton Co., on the west shore of Lake Megantic, 11 miles from Lake Megantic village, on the Canadian Pacific railway. The wharf at this place was built in 1882-83 at a cost of \$721.60. It is built of solid cribwork filled with stones, with a covering made of gravel. In 1887-88 some small repairs were made to it at a cost of \$77. In 1897-98 a vote of \$2,500 was granted to raise and repair the Government wharfs on Lake Megantic, on account of the rise in the lake level caused by the dam which the Montague Pulp Co. built in 1895 across the Chaudiere River at its outlet from the lake. The wharf was repaired and raised five feet above its original height and a covering made to it in gravel at a cost of \$623.05.

The total amount expended on this work is \$1,421.65 as follows :

Construction.....	\$ 721 60
Repairs.....	77 00
Repairs and improvements.....	623 05
Total.....	\$ 1,421 65

*Lac Megantic* is a post village in Compton Co., on the Canadian Pacific Railway, 60 miles from Sherbrooke.

Some extensive repairs in the flooring etc., of the wharf were made during the year 1888-89 at a cost of \$873.02. In 1897-98 it had to be repaired and raised four feet above its original level on account of the rise in the lake caused by the dam above referred to, at a cost of \$1,244.48.

The total amount expended in repairing this wharf since its construction is \$2,117.50.

#### LAKE ST. JOHN—WHARFS.

Lake St. John lies between the parallels of 48° 27' and 48° 51' N. latitude, and the meridians of 71° 35' and 72° 10' W. longitude, about 120 miles north of

## Department of Public Works

Quebec. Its general shape is circular, and its circumference about 100 miles. It lies in an immense valley, and is the reservoir into which numerous large rivers and streams empty, many of which rise in the highlands that separate the North west Territories from Quebec. The principal of these rivers are the Mistassini, Periboka, Kocuatien, Rivière à la Pipe on the north, the Ashuapmouchouan and Ouatichouanish on the west, the Ouatichouan on the south-west and the Metabetschuan, Kuschpahiganish and Belle Rivière on the south. By means of some of these rivers, and their lakes and tributaries, communication from lake St. John may be had through the St. Maurice with the St. Lawrence, and through the Gatineau with the Ottawa. This great lake has its outlet into the Saguenay by the Grande and Petite Décharges, which lie on its east side. The lake contains a number of beautiful islands and its shores abound with inexhaustible quarries of limestone and extensive beds of fine marl.

From the year 1892 to 1898, five wharfs were built by the department on the shores of this lake to accommodate the trade of the parishes of Roberval, St. Félicien, Mistassini, Rivière à la Pipe, and Ticouabé.

*Roberval.*—This village, in Chicoutimi county, is built on the east banks of River Ouatichouanish, near its mouth on the southern shore of Lake St. John, 200 miles north-east of Quebec city, and is the northern terminus of the Roberval branch of the Quebec and Lake St. John railway, which taps the main line at Metabetchouan station. Population 1100.

This place contains three churches, three hotels, four saw mills, two grist mills, four cheese factories, telegraph and express offices and some 14 stores. It is a favourite resort for sportsmen and tourists generally, in the summer season, when five steamers leave the Government wharf daily, carrying freight and passengers to and from important settlements, as well as on pleasure excursions undertaken for the special benefit of the large number of people who visit the Lake St. John region every day.

In 1892-93, the department purchased from H. G. Beemer, Esq., for the sum of \$750.00, an isolated block of cribwork, 75 feet long by 30 feet, which had been built by him at the mouth of the river, 425 feet from the shore of Lake St. John, together with the right of way to the public road, with a view of utilizing the block, etc., in connection with the then projected public landing piers. During the years 1892-93 and 93-94 this block was connected with the shore by means of an approach 425 feet by 25 feet, built of six blocks, 20 feet by 25 feet, of ballasted close-faced cribwork, an earth embankment 50 feet long and six intervening timber spans, at a cost of \$5,469.06. In 1894-95, a head block parallel with the shore, 50 feet by 30 feet and 20 feet high, with slip at outer end was added and the entrance channel of the Ouatichouanish was deepened and widened; 2,750 cubic yards of earth and about 60 boulders removed. Total cost of works carried out \$4,200.31.

This pier as completed in 1895, was 500 feet long and 25 feet wide generally, with the exception of the head block, which measures 50 feet by 30 feet, and has eight feet of water along its outer face at low water and 19 feet at high water during the season of navigation: in the winter the lake recedes beyond the head of the pier which is completely dry all around. During the year 1896-97, a combined freight and shelter shed, 45 feet by 24 feet, was erected on the head block at an expense of \$425.98. In 1897-98 a block of cribwork 75 feet by 25 feet was sunk close to the crib purchased from Mr. Beemer, for the purpose of widening that part of the wharf to 50 feet. Amount expended \$713.86.

The total amount expended on this wharf for construction is \$11,559.21.

*St.-Félicien*, a post village in Chicoutimi Co., on the Assametquagan River, 15 miles from Roberval, on the Quebec and Lake St. John Railway. It contains one Catholic church, five stores, one hotel, and four saw and grist mills. Population 1,000. During the year 1895-96 a wharf was built to accommodate the local trade. It is 70 feet in length, 26 feet in width, and 22 feet high at the outer end at which vessels drawing eight feet can lie at low water. A shed 20 feet square was erected on the wharf at its inner end.

Total cost of construction, \$1,999.68.



*Mistassini*, county of Chicoutimi, is a settlement on the river of the same name, near its confluence with "Rivière au Foin," or Rivière Mistassini, being 36 miles to the northward of Roberval on the west side of Lake St. John, and 18 miles above the mouth of River Mistassini on this lake. Besides the parish church, there is in the locality a monastery of Trappist Fathers; also a grist-mill, a saw-mill and a cheese factory: Population 400. The side-wheel steamer "Colon," drawing  $3\frac{1}{2}$  feet of water and carrying 200 passengers, and a considerable quantity of freight, is subsidized by the local Government, and calls regularly, twice a week, during the season of navigation. In 1896-97, a public wharf was built for the accommodation of the rapidly increasing number of settlers on the fertile land around Lake St. John, on the east side of River Mistassini, immediately above its junction with Rivière au Foin. The structure consists of a fully ballasted close-faced timber crib 30 feet long, 30 feet wide and 20 feet high at the outer end, which is floored over with 3 inch plank; along the outer face there is a depth of five feet at low water. Total amount expended, \$681.04. In 1897-98 a further amount of \$150.00 was expended to build a combined freight and shelter shed 25 feet by 30 feet, at the end of the wharf. An amount of \$23.84 was also paid for sundry accounts. Amount expended, \$173.84.

Total cost of construction, \$854.88.

*Rivière à la Pipe*, a small village situate on the north shore of Lake St. John, at the mouth of the river of the same name, seven miles north of Grande Décharge.

It contains a Roman Catholic church, two saw-mills, one blacksmith shop, and three stores. Population 400.

The wharf in course of construction is situate at a point on lot No. 118, township Taillon, about one mile to the westward of Rivière à la Pipe. It is being built in a southerly direction about 75 feet from the shore, for a length of 200 feet and a width of 25 feet and extends to eight feet depth at the mean summer level of the lake. It was built of close-faced cribwork up to 18 feet during the year 1897-98 and will stand 25 feet high when completed.

The wharf will facilitate communication between the northern and southern shores of the lake which are rendered difficult not only on account of the distances being great by land, but by the state of the roads, or the entire absence of such. The large rivers which flow through the township and territories around Lake St. John also intercept all means of communication and prevent to a certain extent settlement of the lands.

The Quebec Government has built a good road from the public road to the present wharf a distance of two miles. The amount expended at the end of the year 1897-98 was \$3,998.21.

*Ticouabe*, a post village in Chicoutimi county, is situate at the outlet of the river of the same name, 21 miles from Roberval.

A small landing was built at this place during the year 1897-98 to accommodate the local traffic and to help its development. This wharf consists of a solid block of close-faced cribwork 30 feet by 30 feet built a small distance from the shore and connected to it by a platform, supported on trestles, 103 feet long and 25 feet wide. A combined freight and shelter shed 25 feet by 30 feet was also built. Total cost of construction \$1,611.79.

#### LANORAIE.

The village of Lanoraie is situate on the north shore of the St. Lawrence, in the county of Berthier, 46 miles below Montreal. It has a considerable trade in flour, grain and cordwood.

*Construction.*—In 1884 the construction of an isolated block 70 x 30 feet at the bottom and 54 x 27 feet on top was commenced at a distance of 240 feet from shore; the work was completed in 1885 at a cost of \$5,032.01. In 1885 and 1886 the block was connected to shore by an approach 240 feet long, 25 feet wide, and of an average height of 12 feet, at a cost of \$6,886.36. The upper or western side of this approach for a height of six feet from the top, was built on a slope of six inches per foot and sheathed

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with four inch tamarack planks, and the top of the approach was built on a grade of four feet per hundred. The depth of water at the head of the pier is 11 feet at extreme low water.

*Repairs.*—During the winter of 1887 the approach was damaged by an ice shove which curved it slightly towards the east. In April, 1891, it was again moved to the eastward by another ice shove which increased the pitch of the curve to four feet at a distance of 80 feet from the head block, and removed two courses of face timber on a length of 42 feet, and five fenders, on its lower or eastern side. Repairs were commenced on the 5th of November, 1891, and completed on the 28th of the same month at a cost of \$416.04. The missing face timbers and fenders were replaced and fender piles were driven ten feet apart along both faces of the approach.

General repairs were effected to the pier in 1896-7 at a cost of \$1,008.27. The face timbers, fenders and cap pieces were renewed wherever broken or decayed and the sloping faces of the head block and of the approach were resheathed. During the past year the flooring of the pier was completely renewed with 3-inch hemlock deals and general repairs were effected, at a cost of \$531.30.

The total amount expended on this work is \$13,873.98 ; \$11,918.37 being for construction, and \$1,955.61 for repairs.

### LAPRAIRIE.

Laprairie is the chief town of the county of the same name and is situate on the south shore of the River St. Lawrence, seven miles above Montreal. It contains churches for the Episcopalians and Roman Catholics, a convent, an orphans' home, a foundry, a saw and carding mill, a brick yard, telegraph office, eight hotels and about twenty stores. A steam ferry runs between Laprairie and Montreal, making several trips a day. The population is about 2,500. It is a beautiful spot near the Lachine Rapids, much frequented in the summer.

The Government has undertaken to protect Laprairie from the disastrous effects of the spring floods and ice shoves of the St. Lawrence by constructing ice breaking piers, a revetment wall of cribwork some 1,650 feet long and 20 feet wide along the shore of the river in front of the town, and an earth embankment 1,600 feet long at its upper limit. These works, commenced in 1886-87 and continued every year since, are about completed, and are certainly a good protection to the town.

In 1886-87 two ice piers were built about 250 feet apart at the upper end of the town facing the St. Lawrence River, to prevent damage being done to property during the breaking up of the ice in the spring. The piers have proved very effective and cost \$6,736.19. In 1887-88, to prevent a repetition of the past disastrous floods, an earth embankment was constructed inward from the shore for a length of 1,600 feet at the western limit of the town. A cribwork retaining wall was also built for a length of 480 feet half way between the eastern ice breaker and the Richelieu Co's wharf. This wall is 20 feet wide, 10 feet high from low water mark and is filled principally with stone, and cost \$4,989.75. In 1888-89 another cribwork retaining wall 335 feet in length from the Richelieu wharf westward, was commenced and completed to a height of 16 feet above low water mark during the year 1889-90, at a cost of \$7,560.52. It is built of open work, 20 feet in width, with a batter of 1 in 12 on the outer face. In 1890-91, some general work was done in sheathing the walls previously built at a cost of \$658.58. In 1891-92 the retaining wall at the lower end of the town adjoining the Richelieu wharf was extended a further distance of 131 feet at a cost of \$2,495.10. In 1892-93 a further extension to the wall 420 feet long was built to a height of eight feet above low water mark at a cost of \$2,589.51. In 1893-94 the remaining portion of the wall built between the eastern ice breaker and the Richelieu wharf, 284 feet in length, was completed to a height of 10 feet, at a cost of \$2,387.39. In 1895-96 the sum of \$2,015.51 was expended in constructing a stone protection work between the two ice breakers, the distance being 250 feet and raising a portion of the retaining wall to an elevation of 16 feet above low water mark. In 1896-97, 387 feet in length of cribwork wall was raised to the level of 16 feet at a cost of \$4,400.36. In 1897-98 the



revetment wall was completed to a height of 12 feet above low water mark at a cost of \$5,640.64. The whole of this work is built of round logs and filled with stone, and sheathed with 3 in. pine planks.

The total cost of this work is \$39,473.55, as follows :

During the fiscal year	1886-87.....	\$ 6,736 19
" " "	1887-88..	4,989 75
" " "	1888-89.....	7,560 52
" " "	1890-91.....	658 58
" " "	1891-92.....	2,495 10
" " "	1892-93.....	2,589 51
" " "	1893-94.....	2,387 39
" " "	1895-96.....	2,015 51
" " "	1896-97.....	4,400 36
" " "	1897-98.....	5,640 64
Total .....		\$39,473 55

#### L'ISLET.

The village of L'Islet, in the county of the same name, is situate on the south shore of the St. Lawrence, 47 miles below Quebec. Spring tides rise 20 feet ; neap tides, 13 feet.

*Construction.*—In order to accommodate the extensive lumber trade and traffic in general merchandise of the locality, a landing pier was completed in 1855 at a cost of \$113,343.27. The structure is 1,054 feet long and 31 feet wide, with a head block, 50 feet long, 116 feet wide and 34 feet high. The depth of water along the outer face of the block is eight feet at low water spring tides. The repairs effected to the structure before and up to 1875 amounted to \$3,590.85.

*Repairs.*—In 1876 a complete restoration of the pier was commenced, and completed in 1879, the amount expended being \$21,613.36. The superstructure for six or seven courses was taken down and rebuilt with new face timbers, cross ties and longitudinals, and completely filled with stone ballast where required. The shore end of the structure, which was lower than its head and over which heavy seas would break rendering it dangerous, was raised. Two sidewalks, each six feet wide were laid from end to end of the pier and the slips put in good order. From 1880 to 1883 sundry repairs were made to the face timbers, etc., at a cost of \$1,361.23. In 1893 the sum of \$6,190.34 was expended in renewing the floor stringers, flooring, cap timbers, fenders etc., over the whole structure, and in general repairs to the slip and stairways. In 1894 and 1897 the sums of \$21.55 and \$396.80 respectively were expended for sundry repairs. During the past year the face of the slip was sheathed with spruce eight inches in thickness, the stairway on the western side of head block was repaired, 100 planks in the sidewalks were renewed and the roadway was levelled with sand and gravel. The work was done by day labour at a cost of \$211.63.

The total amount expended on the work is \$146,729.03, as follows :—

Construction, before Confederation.....	\$113,343 27
Reconstruction of superstructure.....	21,613 36
Repairs .....	11,772 40
Total .....	\$146,729 03

#### LONGUEUIL.

The town of Longueuil, the chef-lieu of the county of Chambly, is situate on the south shore of the River St. Lawrence, nearly opposite the eastern end of the city of Montreal.

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*Construction.*—The Richelieu and Ontario Navigation company own a wharf at the upper end of the town but its long distance from the business or centre portion and the increasing trade demanded new wharfing accommodation. At the request of the town council the department therefore decided in 1886 to build a landing pier at the foot of St. Alexander street. In November, 1886, a contract was entered into for the construction of the outer portion of the pier, which was commenced at a distance of 675 feet from shore. It consisted of a close faced crib-work structure, 430 feet long and of a uniform width of 20 feet, apart from its outer 90 feet, which was 30 feet wide. It was completed in 1888 at a cost of \$12,491.66. In October, 1889, another contract was entered into for the construction of a block 40 feet long and 50 feet wide along the lower face of the existing pier at its outer end, and of a close-faced cribwork extension to shore, 675 feet long and 20 feet wide, with six buttresses 10 feet wide along its lower face. The work was completed in 1891 at a cost of \$16,248.30. The landing pier was then 1,105 feet in length, including the block at the outer end which was 40 feet long and 80 feet wide; the first 90 feet of the pier adjoining the block was 30 feet wide, and the remaining 975 feet to shore, 20 feet wide. The outer face of the block was 16½ feet high above the bottom of the river, and stood in seven feet of water at extreme low water level.

*Repairs.*—The portion of the pier completed in 1888 was damaged by ice in the spring of 1889, which necessitated an expenditure of \$1,517.77 for repairs. In 1892 the departmental dredge "St. Louis" commenced work at the head of the pier, but found the material too hard for her machinery, and after removing 45 cubic yards of hard-pan at a cost of \$24.00, she ceased work. During the spring of 1892 the head of the pier was damaged, and the block 40 by 50 feet built in 1890 was carried 10 feet down stream. The opening was filled with cribwork and the plank covering was removed and replaced with stone and gravel at a cost of \$2,496.63. In the spring of 1893 the head of the pier with the adjoining 180 feet was moved bodily 13 feet down stream by the ice. In order to give additional weight to that portion of the pier, which is the most exposed to the action of drift ice, it was decided to widen it by means of cribwork built at an angle with the approach, and on a line from the lower inner corner of the head block to the outer corner of the first buttress, a distance of 354 feet, and to fill with earth and stones the area thus enclosed. A portion of this work was carried out in 1894 when a crib 250 feet long, 12 feet wide and of an average height of 12 feet was built in the position above described, and the area between it and the original structure filled level with the top of the pier. The work was done by day labour at a cost of \$2,948.70. In 1895 the remaining portion, 104 feet in length of the work commenced in 1894 was completed, and the spaces between the buttresses were filled with close-faced cribwork in order to better enable the work to resist the action of the ice. The expenditure incurred was \$4,214.19. In 1896 some necessary repairs were performed to the sheathing and face timbers of the upper face of the pier at its outer end, and a gravel roadway 12 feet wide was laid from end to end of the structure at a cost of \$284.11. Minor repairs were effected to the roadway in 1897 at a cost of \$284.56, and during last year the roadway was again repaired at a cost of \$160.66. The pier is now 1,105 feet long and reaches a depth of seven feet at the lowest stage of the St. Lawrence. It is 30 feet wide for the first 700 feet from shore and from 30 to 90 feet wide for the remaining 405 feet which constitutes the head of the structure. Extensive repairs were required to the upper face of the work at its outer end, which had been almost completely broken up by the ice. The reconstruction of the damaged portion is now being proceeded with.

The total amount expended on this work is \$40,670.58, as follows:—

Construction . . . . .	\$28,739 96
Repairs and improvements . . . . .	11,930 62
<hr/>	
Total . . . . .	\$40,670 58



## LOTBINIÈRE.

The village of Lotbinière, in the county of the same name, is situate on the south shore of the St. Lawrence, about 40 miles above Quebec. It has no railway communication and depends entirely, for exchange of supplies, on bateaux and market steamers from Quebec. Spring tides rise  $14\frac{1}{2}$  feet; neap tides,  $8\frac{1}{2}$  feet. A landing pier was built at this place in 1865 by the municipality, but it was soon destroyed by the heavy ice shoves. Since that time a dangerous and inconvenient trestle structure, removable in winter, has been maintained by the Steamboat company. In order to provide more suitable and permanent landing facilities an isolated block was built during the last year at a distance of 500 feet from high water line. The work was done by contract at a cost including superintendence, of \$5,284.60, and was completed in October, 1897. It is a solid close-faced cribwork structure, 75 feet long, 25 feet wide at the top, and 96 feet 4 inches wide at the base. Its upstream end and inner face are built on a slope of 1 in 1, and its outer and lower faces are battered 1 in 12. The top of the upstream end of the work for a length of 15 feet stands 19 feet above the level of extreme low water spring tides, the height of the remaining 60 feet being 16 feet above the same level. The depth of water along the outer face of the work is  $1\frac{1}{2}$  feet at extreme low water spring tides. The work was substantially built of 12 by 12 inch timber, sheathed on its slope with 9-inch hemlock, on its two other faces with the same kind of timber four inches in thickness, and filled with stone ballast of an approved quality. It has successfully withstood the action of the ice shoves.

The total amount expended on this work is \$5,284.60.

## MAGOG.

The town of Magog, in the county of Stanstead, is situate at the outlet of the Magog River from Lake Memphremagog, and is a station on the Canadian Pacific railway. It is a sub-port of entry and contains saw, grist and cotton mills and carriage factories.

In order to accommodate the local trade, a landing pier was purchased in August, 1875, for the sum of \$2,500. It is situate opposite the railway station, and is a pile structure 430 feet long, 24 feet wide for the first 305 feet from shore and 40 feet wide for the remaining 125 feet. Its head is  $12\frac{1}{2}$  feet high above the bottom of the lake and stands in  $7\frac{1}{2}$  feet of water at low water.

*Repairs.*—In 1896-97 the most urgent repairs to the flooring were effected at a cost of \$154.82. During last year a number of broken planks in the flooring were renewed at a cost of \$42.85. The pier still requires extensive repairs to place it in good order for shipping and landing purposes.

The total amount expended on this work is \$2,697.67, which includes the purchase price, \$2,500, and \$197.67 for repairs.

## MATANE.

The village of Matane, in the county of Rimouski, is situate on the south shore of the St. Lawrence, at the mouth of the Matane River, 240 miles below Quebec, and 30 miles by way of Little Metis from St. Octave, the nearest point on the Intercolonial railway. It contains several saw and grist mills and one spool wood factory. Spring tides rise 14 feet; neap tides, 6.70 feet.

*Construction.*—In 1879 a sum of \$10,000.00 was appropriated for the construction of a landing pier, and was expended by day labour by a syndicate appointed by the municipal authorities under the supervision of the department. The pier is built at the mouth of the Matane River along its western shore, and runs parallel to its channel. It consists of 10 cribs 30 feet wide, placed 25 feet apart, and connected by platforms. The lengths of the cribs are: one of 60 feet, four of 30 feet and five of 15 feet, making a

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total length of 480 feet. The pier is dry at low water, but has six feet of water at its outer end at one-third flood, and  $15\frac{1}{2}$  feet at high water spring tides. A further sum of \$72.43 was expended on this work in 1880.

In order to prevent the sand from passing through the spaces left between the cribs, into the channel of the river, these openings were closed in 1882 and 1883 with rows of close piling driven along the eastern face of the work. The unprotected corners of the cribwork which had been damaged by ice were also repaired. The total amount expended during the two years was \$5,358.36. In 1884 pile protection works were commenced along the east shore of the river to prevent the inflow of sand into its channel. The amount expended was \$199.19. The works were completed in 1887, when a further sum of \$500.21 was expended.

In 1886 a landing pier 60 feet long, 30 feet wide and about 20 feet high was built at the lower outer corner of Messrs. Price Brothers' wharf at a cost of \$1,499.75. In 1892 it was connected to the shore by a block and span structure, 160 feet long and 12 feet wide, and the pier itself was raised and general repairs effected at a cost of \$1,261.79. In 1893 an extension, 185 feet long and 30 feet wide, was commenced to the pier constructed in 1886. The work was completed in 1894 at a cost of \$4,183.83. It consists of four piers 20 feet long and 30 feet wide and of an average height of 20 feet, placed 25 feet apart and connected by platforms. The landing pier is now 245 feet long, 30 feet wide and of an average height of 20 feet. The depth of water at its head which was five feet at low water spring tides at the time the work was completed, has since shoaled to one foot.

In order to prevent, by scouring, the accumulation of sand in the channel of the river it was decided, during the past year, to connect the two existing works by a continuous structure. Plans were therefore prepared for a training pier, 640 feet long and 20 feet wide, built of pilework, close faced on its channel side and floored on a width of 12 feet so as to make it available as a landing pier. Tenders were called for the work, which was not, however, carried out owing to objections raised by some of the residents. The only amount expended was \$160.68 for printing and advertising.

*Repairs.*—In 1885 the cribs which form the pier built on the western shore of the river at its mouth were repaired, the expenditure being \$540.97. In 1895 and 1896 the same structure was thoroughly repaired. The piles placed along its eastern face in 1882 had all been broken by ice and carried away, and the corner of the cribs, which the removal of the piles had left unprotected, had been badly damaged. General repairs were therefore effected to the piers, a new row of piles 10 inches square was driven along the whole face of the work, which was further protected by large stones deposited along its base. The work was done by day labour at a cost of \$1,547.94.

During the past year a sum of \$396.22 was expended in sheathing the outer end of the same work.

Notwithstanding the frequent repairs effected to the various Government works at Matane, repairs which at times amounted to partial reconstruction, they are all in a very bad condition due to the action of the ice. The pile protection works built on the east shore of the river have entirely disappeared; the landing pier at the mouth of the river has again been damaged by ice, and the one adjoining Messrs. Price Brothers' wharf is in a dilapidated condition.

The total expenditure on this work since 1879 is \$30,721.37, as follows:—

Construction and improvements.....	\$28,236 24
Repairs.....	2,485 13
Total.....	<hr/> \$30,721 37

### MONTMAGNY.

The town of Montmagny, in the county of the same name, is situate on the south shore of the St. Lawrence, on the Intercolonial railway, 40 miles below Quebec. The Rivière du Sud flows through the middle of the town. Spring tides rise 20 feet; neap tides, 13 feet.



*Construction.*—In 1879-80 an isolated block, 30 feet square, was built in five feet of water at low water spring tides, on the west side of the basin, within the mouth of the Rivière du Sud and three-quarters of a mile from the town. The cost of the structure was \$1,513.09. In 1881 the block was extended shorewards 25 feet and an approach 150 feet long and 24 feet wide was built to shore at a cost of \$3,743.89. In August, 1896, the superstructure of the work was burnt down to seven feet below the top of the flooring, and the lighthouse, which had been erected upon it by the Department of Marine and Fisheries, was also destroyed. The superstructure was rebuilt in 1897, and the work fully ballasted where required. A small waiting room was also erected at the shore end of the pier, a lighthouse built on its outer end, and the approaches repaired. Total expenditure, \$4,046.51. The pier is now 205 feet long; the outer 55 feet are 30 feet wide, and the remaining 150 feet, 24 feet wide. The depth of water along its outer end is  $3\frac{1}{2}$  feet at low water spring tides.

*Repairs.*—From 1883 to 1886 an amount of \$2,607.96 was expended on repairs to the pier and to the roadway leading thereto. In 1887 a number of boulders was removed from the bed of the Rivière du Sud in the vicinity of the head of the pier at a cost of \$1,999.69. In 1889-90-93 and 1894 sundry repairs to the flooring, corner sheathing, cap pieces, etc., were effected at an aggregate cost of \$379.50. During the last year the waiting room was repaired and painted at a cost of \$52.46.

The total expenditure on this work is \$14,290.89, as follows:—

Construction and improvements.....	\$11,303 43
Repairs.....	2,987 46
Total.....	\$14,290 89

#### MURRAY BAY.

Murray Bay, or Malbaie, is one of the best known and most frequented summer resorts of the north shore of the St. Lawrence, in the county of Charlevoix,  $83\frac{1}{2}$  miles below Quebec. The village is situate on both sides of the mouth of the River Malbaie, which empties into a bay one mile deep and about  $2\frac{1}{2}$  miles wide at its entrance. At low tide the bay is dry, with the exception of small channels through which the river discharges. The steamers of the Richelieu and Ontario Navigation company call here daily, and a heavy traffic is done. Spring tides rise 20 feet. Neap tides, 12 feet.

*Construction.*—In 1855 a landing pier was built off a projecting rock, called Pointe au Pic, situate on the west shore of the bay, three miles from the village, at a cost of \$53,487.20. It was 470 feet long and  $30\frac{1}{2}$  feet wide, with the exception of its outer 70 feet which was 108 feet wide. Its head, which was 36 feet in height, stood in 12 feet of water at low water spring tides. In 1876 an extension 30 feet long, 108 feet wide and 42 feet high, reaching to a depth of 18 feet at low water spring tides, was built along the outer face of the pier at a cost of \$14,021.04. In 1883 a moveable slip was placed in the outer face of the structure to accommodate the landing of passengers and freight at all times of the tide, at a cost of \$448.06. In 1884 a shed was built to cover the landing slip and a portion of the head of the wharf at a cost of \$1,099.11. In 1894 an extension 40 feet long, 35 feet wide and 50 feet high was built along the western face of the pier, at its head, the total expenditure being \$5,675.35. The pier is now 500 feet long from end to end. Its landing face is 143 feet long and stands in from 18 to 26 feet of water at low water spring tides. It is built entirely of close faced cribwork, with timber 12 x 12 inches dimensions, and filled with stone ballast. Its cross ties and longitudinals are round logs not less than 14 inches diameter at the small end.

*Repairs.*—The cost of repairs effected to the structure since its construction in 1855 until 1882, inclusively, was \$3,916.00. Since then, however, and owing to the strong action of the ice and the considerable wear and tear due to heavy traffic, annual repairs have been required and executed at a cost, up to 1897 inclusively, of \$8,074.81. During the past year the western side and front of the west wing have been

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sheathed with 7-inch rock elm and the main body of the pier has also been partly sheathed with 3-inch spruce. The flooring was repaired in places, and two face-timbers at the inner end of the structure were renewed.

The work was performed by day labour at a cost of \$484.16.

The total expenditure on this work is \$87,205.73, as follows:—

Construction, before Confederation.....	\$53,487	20
Extensions and improvements since Confederation.....	21,243	56
Repairs.....	12,474	97
Total.....	\$87,205	73

### NEWPORT.

The village of Newport, in the county of Gaspé, is situate at the mouth of the river of the same name, on the north shore of the Baie des Chaleurs, 88 miles east of Campbellton N. B. and 50 miles west of Caplan. Spring tides rise  $4\frac{1}{2}$  feet. Neap tides,  $2\frac{1}{2}$  feet. The population of the village is extensively engaged in fishing, which is carried on almost to the exclusion of all other pursuits.

*Construction.*—In order to provide a harbour of refuge for fishing boats, and affording them easy access into the river and up to the bridge on the public highway it was decided, in 1884, to improve the mouth of the river by excavation and construction of suitable works. The works were not, however, completed until 1887 when a sum of \$2,778.79 was expended. They consisted of two parallel piers placed 20 feet apart; the west pier was 75 feet long, 12 feet wide, and of an average height of eight feet; the east pier, which was originally 140 feet long, 12 feet wide, and 10 feet high, was extended 90 feet and widened to 20 feet on its whole length, in 1889 and 1890, at a cost of \$3,672.03

*Repairs.*—In 1891 general repairs were effected to the piers at a cost of \$450.00. During the past year the sum of \$26.53 was expended for minor repairs.

The total amount expended on these works is \$6,927.35, as follows:—

Construction .....	\$6,450	82
Repairs.....	476	53
Total .....	\$6,927	35

### PHILIPSBURG.

The village of Philipsburg is situate on the east shore of Missisquoi Bay, Lake Champlain, in the county of Missisquoi.

*Construction.*—In the session of 1882 the sum of \$4,000 was granted towards the construction of a landing pier, the municipality to furnish a like amount; a survey was made at a cost of \$185.75, which was the only expenditure incurred. A further sum of \$32.79 was expended in 1884 for examination in connection with the proposed landing. Owing, however, to the refusal of the municipality to grant its share of the estimated cost of the proposed structure, the work was not carried out, and the scheme was abandoned until 1894 when a new survey was made at a cost of \$108.42. In 1895 borings were taken over the site of the proposed structure at a cost of \$165.94, and on the 29th of July, 1895, a contract was entered into for its construction, the municipality having subscribed \$4,000 towards its cost. The work was completed in 1897 at a cost of \$11,142.89. It consists of a breakwater or head block 120 feet long and 25 feet wide, of a trestle work approach 302 feet long and 30 feet wide, and of a stone and earth embankment 285 feet long and 30 feet wide at the top, with side slopes of  $1\frac{1}{2}$  to 1. The outer face of the breakwater is  $17\frac{1}{2}$  feet high above the bottom of the bay and stands in  $7\frac{1}{2}$  feet of water at extreme low water.

*Repairs.*—The embankment was considerably damaged by ice and high water in April, 1897. It was thoroughly repaired during the last year, and the ballast chambers



along the outer face of the breakwater were filled with stone ballast, at a cost of \$711.79.

The total amount expended on this work is \$12,347.58, \$11,635.79 being for construction and \$711.79 for repairs.

PORT AU SAUMON.

Port au Saumon is situate on the north shore of the St. Lawrence, in the county of Charlevoix, 13 miles east of Murray Bay. Spring tides rise 20 feet. Neap tides, 13 feet.

The harbour is frequented by a number of small vessels which, for want of railway communication, carry the whole trade of the locality. Its entrance being obstructed by large boulders, which rendered navigation difficult, in order to make it easier of access at all stages of the tides, a sum of \$462.08 was expended in 1883 in blasting and removing some of the most dangerous boulders, and the work was completed in 1884, when a further sum of \$499.59 was expended. During the past year, part of a shoal, which was obstructing navigation, was removed on an area of 75 x 50 feet to a depth of 2½ feet at low water, and 40 large boulders and a number of smaller ones were removed from the channel. The work was done by day labour during the month of November, 1897, at a cost of \$294.79.

The total expenditure at this place is \$1,256.46.

PORT DANIEL.

The village of Port Daniel is on the north shore of the Baie des Chaleurs, in the county of Bonaventure, about 75 miles east of Campbellton, N.B. and 45 miles west of Percé. Spring tides rise 6 feet. Neap tides, 3 feet.

*Construction.*—During the session of 1886 an appropriation was granted for the construction of a landing pier. The work was executed by contract and completed in 1889, at a cost of \$20,487.58. It was 350 feet long from end to end, 20 feet wide for the first 200 feet, 30 feet wide for the next 100 feet, with a block 50 feet square and 26 feet high at its outer end which stood in 13 feet of water at low water spring tides. On the 15th of November, 1889, a contract was entered into for the construction of an extension 75 feet long, 50 feet wide and 27 feet high at its outer end, reaching to a depth of 13 feet at low water spring tides; the work was completed in October, 1890, at a cost of \$12,586.44. The pier is 425 feet long, is built throughout of close-faced cribwork with timber 12 x 12 inches dimensions; the cross ties and longitudinals are round logs, not less than 14 inches in diameter at the small end.

*Repairs.*—The extension built in 1890 having settled bodily about 3½ feet, it was found necessary in 1895 to lift up the flooring, some cross ties and longitudinals and to rebuild the structure to the height of the main body of the pier. The work was done by day labour at a cost of \$998.54.

Repairs and rebuilding of a similar character had to be effected, in 1897, to the main body of the pier which had settled in places about 3½ feet, for a total length of 277 feet. The freight and shelter shed was also removed from its position at the outer end of the original work to the outer end of the extension, and a portion of it was partitioned off and fitted out as a waiting room. The amount expended was \$1,992.75.

During the past-year it was found expedient to complete the levelling up of the shore end of the pier for a length of 82 feet. The work was done by day labour at a cost of \$170.51.

The total amount expended on this work since it was commenced in 1887 is \$36,235.82, as follows :—

Construction.....	\$33,074 02
Repairs.....	3,161 80
Total.....	<hr/> \$36,235 82

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### RIMOUSKI.

The village of Rimouski is the chief town of the county of the same name, and is situate on the south shore of the St. Lawrence, 179 miles below Quebec. It is an important station on the Intercolonial railway at the point at which the Royal Mail steamships land and receive passengers and mails during the season of navigation. Spring tides rise 15 feet. Neap tides,  $8\frac{1}{2}$  feet.

*Construction.*—In 1855 a pier was completed, about two miles below the village, at a cost of \$106,944.80. The pier was 2,130 feet long, 20 feet wide for the first 1,400 feet from shore, and 30 feet wide for the remaining 730 feet. At its outer end it had a wing turned to the eastward, 70 feet long and 30 feet wide with a return 95 feet long and 30 feet wide, forming a basin for the shelter of the steamboat used for the transfer of passengers and mails. The pier was 28 feet high at its outer end, which stood in nine feet at low water spring tides. The branch line of the Intercolonial railway, built from Rimouski station for the transfer of passengers and mails to the main line, was run along the eastern or lower face of the structure, to its outer end. The pier having settled to some extent near its outer end, which had also been bodily moved some six feet to the eastward by the ice, it was found necessary in 1890 to build along its western face a protection pier 325 feet long, of an average width of 20 feet, and 25 feet high. The work was carried out by contract and completed in 1891 at a cost of \$13,063.61. In 1895 and 1896 plans were prepared for an extension 600 feet long and 40 feet wide, with an arm turned toward the west 260 feet long and 40 feet wide, and for the formation of a tidal basin along the west face of the extension. These works were not carried out, the only expenditure incurred, \$207.31, being in connection with the surveys required for the preparation of the plans. The general dimensions of the structure are still the same as when it was built in 1855, with the exception of that portion which has been widened to 50 feet by the addition of the protection pier.

*Repairs.*—Sundry repairs were effected to the work from the time of its completion in 1855, to 1882, inclusively, at a cost of \$2,616. In 1889-90 further repairs were made to the slips, etc., and a sum of \$822.92 was expended. In 1891 the sheathing of the eastern face of the work had become necessary, as the structure, weakened by age, could no longer support the weight of trains upon it. The work was therefore commenced and completed in 1892 at a cost of \$6,207.15. A total length of 976 feet was sheathed with 9-inch timbers and bolted with  $\frac{7}{8}$  inch iron bolts 18 inches long. In 1893 and 1894 a portion of the western face, 851 feet in length, was sheathed in a similar manner at a cost of \$4,988.41. In the fall of 1897 the attention of the department was called to the fact that the pier was no longer in a fit condition to carry the weight of the trains. It was ascertained by a careful examination made in April, 1898, that the whole of the superstructure was in an advanced state of decay and would have to be completely rebuilt. In order, however, to avoid the delay which a complete reconstruction would cause in the transfer of passengers and mails to and from the steamships, it was decided to effect only such temporary repairs as would place the pier in a suitable condition in time for the opening of navigation. The three upper tiers of cross ties and longitudinals were therefore removed on a length of 1,800 feet from the outer end and new timbers substituted, the railway track was moved from the east to the west side, which was considered the safer, and stringers were placed under the rails. The flooring was also partly renewed on the length above mentioned. The work was done by day labour and completed during the first week of June at a cost of \$4,416.84.

A further sum of \$498.55 was expended in sundry repairs to the flooring and floor stringers.

The total amount expended on this work is \$139,267.04, as follows:—

Construction, before Confederation.....	\$106,944 80
“ since “ .....	13,270 92
Repairs.....	19,051 32
Total.....	<hr/> \$139,267 04



## RIVIÈRE DU LIÈVRE, (LOCK AND DAM.)

The Rivière du Lièvre flows through the county of Ottawa, and empties into the Ottawa River at Buckingham station on the Canadian Pacific railway, 18 miles below Ottawa.

The magnitude of the trade and business done on this river, previous to the completion of the lock and dam at Little Rapids, may be judged from the following return of the output of timber and phosphate for the twelve months ended June 30th, 1888 :—

Railway ties.....	40,000
Cedar posts.....	30,000
Square timber (cubic feet).....	154,395
Lumber (B.M.).....	46,500,000
Phosphate (tons).....	27,537
Mica (lbs).....	10,000
Feldspar (tons).....	50

The river was then navigable at high water from the village of Buckingham to High Falls, a distance of 22 miles. But, during low water, navigation was practically stopped at the foot of Little Rapids, a distance of 12 miles above the village of Buckingham. Various amounts, aggregating \$10,053.68 were expended from 1881 to 1887, in improving the navigation of the river to High Falls; boulders and ledges of rock were blasted and removed from the bed of the channel through the Long Rapids, situate  $7\frac{1}{2}$  miles above the Little Rapids. The channel through the latter was also improved in a similar manner and a floating stage carrying a double-gearred winch, was placed at its head to facilitate the passage of barges carrying phosphate. Notwithstanding those improvements, navigation still remained unsatisfactory. A careful survey of the locality was then made, and it was ascertained that any further deepening of the channel through the Little Rapids would tend to lower the level of the water in the upper reaches of the river, and render the driving of logs impossible at any other time than during the very highest stages of the waters.

*Construction.*—The construction of a lock and dam at the Little Rapids was therefore decided upon and a contract for the execution of the works was entered into with Messrs. Poupore & Co. in December, 1886, and completed in April, 1892, at a total cost of \$233,658.65.

The lock is situate on the east shore of the river. It is built of cut stone masonry in cement mortar, 150 feet long between the gates, 32 feet 6 inches wide at the bottom with eight feet of water on the mitre sills, and a lift of 13 feet 9 inches at extreme low water. Along the western face of the work a retaining wall was built and was carried 143 feet above the upper end of the latter to serve as a guide pier to the upper entrance. The dam, which is built of close-faced cribwork, is 270 feet long and 34 feet wide at the bottom; it starts from the western face of the retaining wall opposite the upper gates of the lock, and crosses the streams to the western abutment, which is 65 feet long and 40 feet wide. Through its centre a timber slide 18 feet wide was built for the passage of timber and logs, and booms were strung from the opening to mooring piers placed on each shore of the river 290 feet above the dam.

*Repairs.*—During the year 1893-94 some necessary repairs were made to the west abutment of the dam and to the lower wharf at a cost of \$102.65. In 1894-95, \$267.70 was expended in building a protection pier above the west abutment of the dam, to prevent the river from working its way back of this abutment during the spring freshets. In 1895-96 some minor repairs were made in filling holes and depressions in the west embankment, which was sinking in some places and required levelling, at a cost of \$115.00. In 1896-97, the upper portion of the lower entrance wall, which had bulged out about 14 inches for a length of 100 feet from the masonry of the lock, was taken down and a new wall, 135 feet long by 25 feet wide, built in its place. This bulge was getting worse every year, and it was feared that the pressure of the earth backing would soon cause it to collapse and block the lower entrance of the lock. The crib, 43

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feet by 22 feet, built at the head of the western abutment, to prevent undermining was also completed. This crib imperfectly fulfilled its object, a quantity of water still making its way underneath the abutment, and it was found necessary to remove this source of danger by adding three feet to the height of the crib, fully ballasting it and sheathing its outer face from top to bottom. The cost of these repairs amounted to \$1,824.39. In 1897-98 the sum of \$4,419.94 was expended in rebuilding the retaining wall from the dam to the upper end of the guide pier, a distance of 226 feet, in close face cribwork from the low water level to an elevation of 10 feet with a width of 26 to 32 feet. This reconstruction was absolutely necessary to protect the lock wall, as the face timbers of the retaining wall were gradually being pressed out by the stone ballast, the dovetails of the cross ties having split and decayed, and the cross ties being bent and broken.

The following is a statement showing the cost of the work, repairs and maintenance, and the amounts collected during each year, up to and including the last fiscal year, 1897-98.

Year.	Cost of Construction.	Repairs and Improvements	Maintenance.	Revenue.	Remarks.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	
1887-88.	43,329 04	.....	.....	.....	Lock and dam in course of construction
1888-89.	64,506 74	.....	.....	.....	" "
1889-90.	50,280 50	.....	.....	.....	" "
1890-91.	40,019 14	.....	.....	.....	Masonry of lock completed and work on dam progressing rapidly.
1891-92.	35,247 72	.....	193 52	.....	Lock and dam completed and first boat locked on the 19th of April.
1892-93.	275 51	.....	952 86	243 87	Building 460 feet of booms,
1893-94.	.....	102 65	768 21	532 59	
1894-95.	.....	267 70	840 34	404 30	
1895-96.	.....	115 00	851 60	230 33	
1896-97.	.....	1,824 39	790 79	198 45	
1897-98.	.....	4,419 94	736 19	246 84	
	233,658 65	6,729 68	5,133 51	1,856 38	

From the foregoing statement it will be seen that the revenue collected has diminished every year, the shrinkage being caused by the suspension of operations on the phosphate mines and the closing up of Messrs. Grondin & Racicot Co.'s saw-mill.

Owing to the flooding of land caused by the construction of the dam, amounts aggregating \$4,559.04 were paid as damages.

The total expenditure incurred in connection with this work is as follows:—

Construction.....	\$233,658 65
Repairs.....	6,729 68
Staff and maintenance....	5,133 51
Claims for damages, etc.....	4,559 04
Total.....	\$250,080 88

During the year 1893-94, after the construction of the lock, the sum of \$1,244.94 was expended in removing boulders obstructing the channel through the long rapids.

## RIVIÈRE OUELLE.

The village of Rivière Ouelle, in the county of Kamouraska, is situate on the river of the same name, on the south shore of the St. Lawrence, seventy-five miles below Quebec. Spring tides rise 20 feet ; neap tides, 13 feet.



*Construction.*—The pier is situate at Pointe aux Orignaux, four and one-half miles below the village. It is substantially built throughout of cribwork filled with stone ballast, and is 1,350 feet long, of a uniform width of 28 feet apart from its outer 51 feet which is  $237\frac{1}{2}$  feet wide. Its head is 42 feet high above the bottom of the river and stands in 16 feet of water at low water spring tides. The pier was completed in 1856, at a cost of \$225,229.87. In 1875 a lighthouse was erected on the head of the pier by the Department of Marine and Fisheries.

*Improvements and repairs.*—The gravel roadway which constituted the top of the pier, having frequently been washed out by the heavy seas which broke over it, was entirely covered in 1879 with a 3-inch plank flooring, the cost of which, together with that of minor repairs effected to the work since its completion, amounted to \$66,893.63.

In 1881 it was deemed advisable to raise the top of the structure, which had settled over its whole length, to its original level, and the work was commenced. It was continued during the three following years and completed in 1885 at a cost of \$14,701.33. Owing to the decayed condition of some of the face timbers, it became necessary to sheath the head of the pier, a portion of the work was done in 1886, and it was completed in 1887 at a cost of \$7,109.71. During the winter of 1887 the pier was considerably damaged by the ice, the necessary repairs were effected in 1888 at a cost of \$935.00, and in the two following years, a further sum of \$827.62 was expended on the landing slips, etc. In 1891, the two outer corners of the head of the pier were resheathed, and missing sheet piles were replaced where most urgently required; the amount expended was \$1,494.28. From 1893 to 1897 inclusive, general repairs, amounting to \$1,820.97, were effected to the slips, flooring, cap pieces and sheathing.

During the past year the sheathing of the two outer corners of the head of the pier was again renewed with birch timber and strengthened with iron straps; 100 feet of broken or decayed sheathing on both sides of the pier was removed and replaced with 5-inch spruce timber, missing iron straps on the steps of the slips were replaced, and other minor repairs were effected. The work was done by day labour at a cost of \$1,004.65.

The total expenditure on this work is \$260,017.06, made up as follows:—

Construction, before Confederation . . . . .	225,229 87
Repairs and improvements . . . . .	34,787 19
Total . . . . .	<hr/> \$260,017 06

#### RIVIÈRE DU LOUP (EN BAS).

The village of Riviere du Loup, now called Fraserville, is the *chef-lieu* of the county of Temiscouata, and is situate on the south shore of the St. Lawrence, 114 miles below Quebec. Spring tides rise 19 feet. Neap tides, 12 feet.

*Construction.*—In 1855 a pier built of close-faced cribwork filled with stone ballast was completed at the extremity of a point of land called Pointe de la Rivière du Loup, about one mile distant from the village, at a total cost of \$170,129.35. It was 1,641 feet long and of a uniform width of 30 feet, with the exception of its outer 50 feet, which was 124 feet wide. Its head was 42 feet high above the bottom of the river, and stood in 16 feet of water at low water spring tides. In 1884 and 1885 an extension to the head of the pier, 100 feet long, 50 feet wide, and 42 feet high was built by contract at a cost of \$24,158.94. In 1887 a combined waiting room and freight shed was erected on the head of the pier and some repairs were effected to the hand-rail and flooring at a cost of \$3,169.79. In 1891 a hand-railing was constructed on the whole length of the pier along its east side, and some repairs were effected to the flooring at a cost of \$740.40.

*Repairs.*—During the first ten years of Confederation \$1,861.86 were expended on minor repairs. In 1879, thorough repairs were commenced on the pier and were completed in 1883 at a cost of \$15,282.93. The structure having sunk to such an extent that the waves washed over it, was raised three feet, and a berth for vessels was

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dredged along its western face to a depth of 16 feet at low water spring tides. The pier was severely damaged by ice in the spring of 1885, necessitating extensive repairs which were performed in 1886 at a cost of \$9,222.78. Sundry repairs to the face timbers, flooring, floor stringers, hand-railings and slips were effected every year from 1888 to 1897, inclusive, at a total cost of \$2,756.00.

During the past year the flooring and part of the floor stringers have been renewed on a length of 1,150 feet and a width of 30 feet, the portion of the structure under the railway track has been strengthened, 500 feet of capping was renewed, 16 new snubbing posts were put in, painted and covered with zinc caps, two ladders were placed, and part of the old sheathing was bolted. The work was done by day labour at a cost of \$2,982.43.

The total expenditure on this work has been \$230,304.48, as follows :—

Construction before Confederation.....	\$170,129 35
“ after “ .....	28,069 13
Repairs.....	32,106 00
	<hr/>
Total .....	\$230,304 48

### RIVER ST. MAURICE—CHANNEL BETWEEN GRANDES PILES AND LA TUQUE.

The St. Maurice, a river of Quebec, one of the largest tributaries of the St. Lawrence, takes its rise in two small springs, one being in a savanne and the other a half mile from it, at the foot of a small hill forming part of the height of land between the province of Quebec and the North-west Territories, over 400 miles north-west of Three Rivers, at which point it falls into the St. Lawrence. It expands into numerous lakes, some of large size, and its banks are generally high, in some places from 200 to 1,000 feet, and covered with groups of majestic trees. It is adorned with a number of beautiful islands, and has a great variety of falls and cascades, the most important being the falls of Grand-Mère and the Shawenegan. From its outlet to Grandes Piles, a distance of 37 miles, this river is not navigable, owing to the numerous falls and rapids which follow each other without intermission, but from Grandes Piles up to La Tuque, a distance of 75 miles, there is a channel for vessels the draught of which at places is, however, limited to two feet at low water, on account of several impediments, in this stretch of 75 miles, the impediments to navigation are greatest at the Rapids Manigance, the shoals at the Mehonac, Pointe à Tom, the shoal at l’Ile aux Morpions, and at Pointe à Trudel near Grandes Piles.

In 1891-92, work was commenced at some of the above mentioned points to make them navigable for boats of greater draught. At the shoal opposite River Mekinac and at the Rapid Manigance a large quantity of rock was blasted and removed at a cost of \$1,225.26. In 1892-93, some further improvements were made to the Rapid Manigance, but the work had to be discontinued after a short time, owing to a sudden rise in the water. The sum expended was \$1,279.78. In 1893-94 between the 10th July and the 16th of October, a large number of boulders were removed from the upper reef on the western side of the channel in the Rapid Manigance, 644 being removed, and 61 which were too large to handle, broken up with dynamite. The channels on the shoals at the Mekinac and at Pointe à Trudel were also deepened, and the best channel, at the shallow point, between Grandes Piles and La Tuque was marked out for the season of navigation. Amount expended \$3,142.70. In 1894-95, the shoal at Mekinac was deepened to five feet; and thirty-nine land marks were established on the river bank to indicate the channel; 71 buoys have been kept at the shallow point during the navigable season to indicate the channel. The amount expended during the year was \$1,721.50.

In 1895-96 a total number of fifty-two landmarks were fixed to indicate the channel and the buoys were kept in position. Some landmarks were repaired and whitewashed, the position of some of these was also altered owing to a change in the direction of the channel. The deepening of the channel at l’Ile aux Morpions was also commenced, but very little was done owing to a sudden rise of the water. Amount expended, \$955.77.



In 1896-97 the only work done was the placing of buoys and their removal in the fall, and the repairing of some landmarks. Expenditure, \$162.33.

In 1897-98 the sum of \$1,048.43 was expended in purchasing materials for the work and in placing and removing the buoys.

The total amount expended in this work is as follows :—

During fiscal year 1891-92.....	\$1,225 26
do 1892-93.....	1,279 78
do 1893-94.....	3,142 70
do 1894-95.....	1,721 50
do 1895-96.....	955 77
do 1896-97.....	162 33
do 1897-98.....	1,048 43
Total .....	<hr/> \$9,535 77

#### RIVIÈRE DU SUD.

The town of Montmagny, in the county of the same name, is situate on the south shore of the St. Lawrence, on the Intercolonial railway, 40 miles below Quebec. From south-west to south-east, the town is crossed by the Rivière du Sud whose banks, owing to the united action of the ice and the swift current, were considerably eroded especially on the south-east side where the public road was partly washed away.

*Construction.*—To prevent further damage a contract was entered into for the construction of protection work, which was commenced in December, 1894, and completed in May, 1895, at a cost of \$5,105.96. The work consisted of a dry masonry retaining wall 830 feet long, seven feet wide at the base, tapering to five feet at the top, and having a mean height of seven feet. The back filling was done with broken stone, and two box culverts were constructed to allow the water from the adjoining lands to flow to the river. The retaining wall was built from the Intercolonial railway bridge in a southwardly direction, parallel to and along the south-east shore of the river. During the spring freshets of 1896, the upper courses of the wall were disturbed by the ice which was carried over the wall into the road, rendering it impassable for several weeks. It therefore became necessary to repair the damaged portion of the wall by relaying the disturbed courses in cement, and to increase the height of the whole work two feet in order to prevent the ice from being again carried over it. The work was performed by day labour during the year 1896-97 at a cost of \$3,993.08.

*Repairs.*—During the last year minor repairs were effected to the retaining wall at a cost of \$9.76.

The total amount expended on this work is \$9,108.80, \$9,099.04 being for construction and \$9.76 for repairs.

#### ST. ANICET—(WHARF).

St. Anicet, is a post village in Huntingdon Co., 10½ miles from White station on the Grand Trunk railway, (Montreal and Champlain division) and 56 miles south-west of Montreal, on the south shore of Lake St. Francis. It contains one Roman Catholic church, three stores, two hotels and one telegraph office. Population 250. This pier was built in 1862 at a cost of \$1,920.00 and stands five feet three inches above low water. It is 300 feet in length, the width of the 200 feet nearest to the shore, or approach, is 13 feet, and the other 100 feet, or outer block, 35 feet. The shore abutment consists of a solid crib 47 feet long and the remaining 153 feet of the approach is supported on four cribs, 12 by 13 feet long, united by timber spans of stringers and planking. In 1889-90, some slight repairs were made amounting to \$48.67. In 1890-91, the entire approach, 200 feet long, was rebuilt from the water line at a cost of \$635.10. In 1892-93, small repairs were made amounting to \$25.88. In 1893-94, the outer block 100 feet by 35, which is of solid cribwork, was rebuilt from the low water line by Mr L.

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N. Masson, contractor, at a cost of \$1,500.00. A shed for the accommodation of passengers and freight was also built on the wharf, the same year, at a cost of \$225.35. In 1897-98 the sum of \$2,197.95 was expended for the addition of a wing or return 60 feet long by 30 feet wide at the outer end and 40 feet wide at the inner end, on the upstream side of the wharf, the object being to enable vessels to lie at the front of the wharf instead of along its sides, where it is very difficult to land during rough weather caused by westerly winds. This addition was built in close-faced cribwork up to the level of the old wharf, and was covered with 3 inch hemlock planks. Out of the above mentioned amount some slight repairs were made to the old wharf.

The total amount expended on this work is \$6,552.95, as follows :—

Construction.....	\$4,117 95
Reconstruction.....	2,360 45
Repairs .....	74 55
	<hr/>
Total .....	\$6,552 95

### STE. ANNE DE LA POCATIÈRE.

The village of Ste. Anne de la Pocatière, in the county of Kamouraska, is situate on the south shore of the St. Lawrence, 75 miles below Quebec. Spring tides rise 20 feet. Neap tides, 13 feet.

*Construction.*—In order to accommodate the extensive shipping trade of the village and locality, the construction of a landing pier was commenced in 1885 and completed in 1887 at a cost of \$9,893.15. It is 580 feet long over all and 20 feet wide, and consists of a stone and earth embankment or approach 100 feet long and 20 feet wide with side and end slopes of 1 in 1, and of 11 cribs placed 25 feet apart and connected with platforms. The cribs are all 20 feet square, apart from the outer one which is 30 feet square. The head of the pier is 23 feet high and stands in 16 feet of water at high water spring tides ; it is dry at low water.

*Repairs.*—During the last year the pier was repaired for the first time since its completion in 1887. One of the cribs which was moved out of place by the ice was unloaded and floated in its proper position, part of the floor stringers and flooring was renewed, about 50 toises of stone were placed in the cribs not sufficiently ballasted, the outer corners of the head of the pier were sheathed and the approach repaired.

The work was done by day labour at a cost of \$984.17.

The total expenditure on this work is \$10,877.32, as follows :—

Construction.....	\$9,893 15
Repairs.....	984 17
	<hr/>
Total. ....	\$10,877 32

### STE. ANNE DU SAGUENAY.

The parish of Ste. Anne du Saguenay, is situate on the north shore of the Saguenay River, 72 $\frac{1}{4}$  miles above Tadousac and opposite the town of Chicoutimi. Its population in 1897 was over 2,000. Besides the church and post office, the parish contains seven stores, four cheese factories, a limekiln, a brick-yard and a pottery. The only market for the produce of the farms of this section of the north shore of the river is Chicoutimi. Spring tides rise 15 feet. Neap tides, 8 feet.

*Construction.*—As early as 1879 the Dominion Government was urged to construct a landing pier for the accommodation of the inhabitants of the district. The request was not, however, considered until 1888 when a portion of the timber required for the proposed structure was purchased at a cost of \$2,100. In 1889 the pier was commenced from shore outward, and at the close of the year 1888-89, a portion 77 feet long and 39 feet wide, including a slip 12 feet wide on its lower or eastern face, had been com-



pleted at a cost of \$2,109.69. It was built of close-faced cribwork filled with stone ballast. In 1890 this shore block was extended 87 feet on a width of 27 feet at a cost of \$2,045.50, and in 1891 a further length of 50 feet of similar cribwork, 27 feet wide, was added at a cost of \$2,498.96. In 1892 a head block 30 feet long, 60 feet wide and 20 feet high was built at a distance of 250 feet out from the end of the work completed the previous year, at a cost of \$2,262.11, and in 1896 this block was raised  $8\frac{1}{2}$  feet and put on the same level as that of the work built out from shore, viz.: six feet above ordinary high water spring tides. With a view of completing the pier to shore, a sum of \$5,573.25 was expended in 1897 for the construction of two cribs, each  $87\frac{1}{2}$  feet long and 25 feet wide, placed 25 feet apart and 25 feet from both the head and shore blocks. During the last year the three 25 foot openings left in the work were spanned, the flooring was laid and the structure completed to shore at a cost of \$746.70. The pier is now 494 feet long, 39 feet wide for the first 95 feet from shore, 27 feet wide for the following 119 feet, 25 feet wide for the next 250 feet, and finally 60 feet wide for the last 30 feet. It is  $28\frac{1}{2}$  feet high above the bottom of the river, at its outer end, and stands in  $7\frac{1}{2}$  feet of water at low water spring tides. It is substantially built throughout of close-faced cribwork filled with stone ballast. Some boulders were removed in 1894 from the vicinity of the head of the pier at a cost of \$99.30. During the whole season of navigation a steamboat performs a regular ferry service every hour from Ste. Anne to Chicoutimi.

The total amount expended in connection with the construction of this work is \$18,434.37.

#### STE. ANNE DE SOREL.

The village of Ste. Anne de Sorel, in the county of Richelieu, is situate at the head of Lake St. Peter, on the south shore of the St. Lawrence, two miles below the town of Sorel. During the spring freshets of the St. Lawrence a considerable portion of the parish of Ste. Anne and of the islands opposite, is flooded. In order to prevent the ice from being carried by the floods over the low-lying lands along the shore, ten ice piers were built between 1881 and 1890 at or in the vicinity of the village.

*Construction.*—The two first ice piers were built in 1881-82 in the Chenal du Moine, one of the channels of the St. Lawrence, and about two miles below the village of Ste. Anne. They were 30 feet square and fully answered the purpose for which they were intended. Their total cost was \$1,957.97. At the end of the year 1882-83 the construction of two additional piers was commenced in the same channel. They were completed during the winter of 1883-84 at a cost of \$3,536.38. Another pier was built in 1885 at the head of Chenal du Moine, at a cost of \$1,176.53, and repairs amounting to \$7.20 were effected to the piers built in 1884. The sixth pier was built in 1886 at a cost of \$1,321.86, which amount also included the cost of repairs effected to the piers built in 1884. In order to afford further protection against ice shoves a seventh pier was built in 1887, a short distance below the one built in 1885. Its cost was \$836.66. The eighth pier was built in 1888 on the property of Bruno Peloquin, and one of the piers built in 1884 was raised 3 feet 4 inches at a cost of \$947.67. In 1889, another pier was built at the entrance of Chenal du Moine, about  $11\frac{1}{2}$  miles below the village. It was 30 feet long, 24 feet wide and  $21\frac{1}{2}$  feet high and cost \$2,708.28. In 1890, the necessary materials for the construction of another pier, opposite the church, were procured at a cost of \$2,497.11, and in 1891 the structure was carried up to a height of five feet above low water level at a cost of \$1,696.25. The pier measures 60 feet by 25 feet at the bottom and 56 feet by 24 feet on the top. It stands in seven feet of water and has a height of 12 feet. During the last year three new piers were built for the protection of properties which were not guarded by the old ones, and one of the latter was strengthened and repaired. The new piers measure 24 feet by 20 feet and are from 12 to 14 feet in height. Their total cost amounted to \$3,514.68.

Before the construction of the above described works the properties along this low-lying shore were considerably damaged every year at the breaking up of the ice. The protection afforded by the ice piers has, however, been so effective that little or no

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damages are now sustained, and it is expected that no additional works of this nature will be required.

The total expenditure on ice piers at Ste. Anne and along the Chenal du Moine is \$16,685.91, which amount includes cost of repairs to the old works as well as that of construction of the new ones.

### STE. AGATHE DES MONTS.

The village of Ste. Agathe des Monts, in the county of Terrebonne, is situate on the west shore of the Rivière du Nord, about 30 miles north-west from St. Jérôme.

At equal distances of about three miles from the village are two lakes, Lac des Sables in the township of Beresford and Lac des Castors in the township of Howard. These lakes are connected by a small stream called Rivière aux Castors. The river is not navigable, but is used for the floating of logs. During last year the channel of the river was improved at a cost of \$298 by the removal of ledges of rock and boulders.

### STE. CROIX.

The village of Ste. Croix, in the county of Lotbinière, is situate on the south shore of the St. Lawrence, 28 miles above Quebec. It contains nine stores, six saw mills and two grist-mills. Spring tides rise  $15\frac{1}{2}$  feet. Neap tides,  $8\frac{3}{4}$  feet.

The approach to the only landing pier at this place is obstructed by boulders which lie in chains along the foreshore of the river. Some of these boulders, which were a source of danger to vessels during the lower stages of the tide, were removed during last year at a cost of \$518.12.

### STE. FAMILLE.

The village of Ste. Famille is situate on the north shore of the Island of Orleans, in the county of Montmorency, 17 miles below Quebec. Spring tides rise 19 feet. Neap tides, 13 feet.

*Construction.*—In 1876 the inhabitants constructed a small landing pier, which was considerably extended and enlarged by the department between the years 1879 and 1882 at a cost of \$9,323.86. It is now 475 feet long and consists of a head block 231 feet long and 25 feet wide, apart from a slip eight feet wide along its lower or eastern face, and of five cribs, connected with stringers, upon which the flooring is laid. The four cribs adjoining the head block are 25 feet square and are placed at distances varying from 24 feet to two feet apart. The shore end crib is 58 feet long and 18 feet wide. The head of the pier is 24 feet high above the bottom of the river and stands in 18 feet of water at high water spring tides.

*Repairs.*—In 1887 the pier was thoroughly repaired at a cost of \$300.04. In 1891 the flooring of the pier was renewed and additional floor stringers were put in. One of the cribs was also rebuilt and new fenders placed on the outer end of the structure; expenditure, \$999.30. During the last year the two outer spans between the isolated cribs were filled with cribwork and stone ballast, the stringers and flooring were renewed on the whole length of the pier, and the snubbing posts and fenders were renewed. The work was done by day labour during the months of July and August, at a cost of \$1,809.82.

The total expenditure on this work is \$12,433.02, made up as follows:—

Construction.....	\$ 9,323 86
Repairs.....	3,109 16
	<hr/>
Total.....	\$12,433 02

### ST. FULGENCE—(ISOLATED BLOCK.)

St. Fulgence (otherwise called L'Anse aux Feins), is a small village in Chicoutimi County, on the north shore of the Saguenay River, 10 miles from Chicoutimi. It



contains one Roman Catholic church, four stores and two saw-mills. Population of parish, 1,000.

In 1897-98 the department commenced the construction of an isolated block of close-faced cribwork to enable schooners and steamers of the R. & O. Navigation Co., to land and ship freight and passengers at all times. This block is 60 feet long, 30 feet wide, and was built during the year to an elevation of 20 feet from the bed of the river. It is proposed to complete this work to an elevation of 36 feet in the near future. The block is sunk in 10 feet of water at low water spring tides, a distance of about 2,500 feet out from the shore at high water mark. Spring tides rise 20 feet. Neaps 13 feet. The amount expended on this work during the year was \$2,998.04.

#### STE. IRÉNÉE.

The village of Ste. Irénée is situate on the north shore of the St. Lawrence, in the county of Charlevoix, 78 miles below Quebec, and five miles west of Murray Bay. It contains one cheese factory, two grist-mills and four saw-mills. Spring tides rise 19 feet. Neap tides, 12 feet.

*Construction.*—In September, 1886, a contract was entered into for the removal of a block 80 feet long, 30 feet wide and 18 feet high, from Les Eboulements to this place, and during the year the work was done at a cost of \$3,284.87. The block was sunk in 12 feet of water at low water spring tides, at a distance of about 535 feet from high water mark. In 1888 and 1889 the block was raised 19 feet, thoroughly repaired and floored at a total cost of \$5,689.48. In 1896 a close-faced cribwork extension, 60 feet long, 22 feet wide and of an average height of 30 feet, was built shoreward on a line with the east side of the block, at a cost of \$2,128.68. A portion of this extension was carried away by an ice shove in January, 1896, it was rebuilt in May and June, 1897, and made 62 feet long, 32 feet wide and 33 feet high, at a cost of \$3,588.31, which amount also included the cost of necessary repairs to the block. During the last year, a further close-faced cribwork extension 177 feet long, 20 feet wide and of an average height of 23 feet, was built shoreward at a cost of \$4,000.94. The pier is now being completed to shore.

*Repairs.*—Sundry repairs were effected to the block in 1894 and 1895 when the sums of \$79.99 and \$21.50 respectively were expended. In 1896, a sum of \$781.20 was expended for general repairs.

*Improvements to the mouth of the river.*—The pier is built about one third of a mile to the westward of a small river. In 1890, a sum of \$501.73 was expended in removing boulders from the mouth of the river so as to allow schooners to winter safely therein. With the boulders removed a small breakwater was built to further protect the entrance to this small harbour from north-east winds.

The total amount expended at Ste. Irénée is \$20,076.70, as follows :—

Construction of landing pier and improvements.....	\$18,692 28
Repairs .....	882 69
Improvements to mouth of river.....	501 73
Total.....	<hr/> \$20,076 70

#### ST. JEAN DES CHAILLONS.

St. Jean des Chaillons, is an important village in the county of Lotbinière, on the south side of the River St. Lawrence, 108 miles below Montreal. The chief industry of the village is the manufacture of bricks, about ten millions of which are made annually. About 25 bateaux and over 200 men are exclusively employed during the season of navigation in shipping these bricks to Montreal. The freight charges to Montreal were quite high, owing to the extremely dangerous nature of the river bed near the shore, and loaded vessels had to regulate their departure, during the low water season,

## Department of Public Works.

by the spring tides, which was the cause of many vexatious delays. The attention of the department was, therefore, called to the necessity of dredging and removing rock obstructions in the river bed, in front of the brick sheds, with a view of affording better loading and landing facilities to bateaux frequenting the locality. In 1896-97 the sum of \$483.55 was expended in removing the most dangerous obstructions in from three to eight feet depth at low water. In 1897 between the 4th of May and the 30th of June, the dredge "Nithsdale" was employed in dredging a channel leading to the brickyard wharfs, as well as in front of them to a depth of nine feet at low water level. Four adjoining cuts of 1,750, 1,019, 950 and 850 feet long were made having each a width of 25 feet, removing a total of 47,705 cubic yards of clay and boulders. "Stone Lifter No. 1" was also engaged from the 5th of September to the 8th of October and from the 1st to the 30th of June, in removing huge boulders from the channel, which had been loosened by the dredge, the quantity taken out being 281 cubic yards. This work allows bateaux and other river craft engaged in the brick trade to leave with full loads without running the risk of striking rocks and being wrecked. The amount expended during the year was \$4,998.35.

The total amount expended on this work is as follows:—

During year 1896-97.....	\$ 483 55
do do 1897-98.....	4,998 35
Total.....	<hr/> \$5,481 90

### ST. JEAN, (ISLE D'ORLEANS.)

The village of St. Jean is situate on the south shore of the Island of Orleans, in the county of Montmorency, 18 miles below Quebec. Spring tides rise 19 feet. Neap tides, 13 feet.

*Construction.*—The landing pier at this place was built by the municipality in or about 1859. It is 651 feet long over all, and consists of a stone and earth embankment or approach 101 feet long and 30 feet wide at the top, and of a close-faced cribwork structure 550 feet long, and of a uniform width of 30 feet, apart from its outer 83 feet which is 50 feet wide. The head of the pier is 32 feet high above the bottom of the river, and stands in eight feet of water at low water spring tides. A lighthouse was erected in 1874 on the head of the pier, by the Department of Marine and Fisheries. In 1884, the first steps were taken by the department towards the purchase of the structure and a sum of \$60.55 was expended for surveys and legal expenses. The purchase was effected in 1885 at a cost of \$8,183.46, including legal and other expenses.

*Repairs.*—The pier was repaired by the department in 1881 at a cost of \$470.93, and in 1884 a further amount of \$55.70 was expended on minor repairs. In 1886 repairs were made to the roadway and to the slip on the east side of the wharf at a cost of \$699.98, and during the following year general repairs were effected at a cost of \$1,009.-20. In 1891, a sum of \$500.82 was expended on repairs to the flooring and to the approach, and in 1893, a number of broken planks in the flooring were renewed at a cost of \$25.00. In 1894, it became necessary to rebuild the superstructure of the pier, the timbers of which were in an advanced state of decay. The work was continued in 1895 and completed in 1896 at a cost of \$8,658.32. The whole superstructure of the work for a depth of 5 feet 9 inches was removed and rebuilt with new face timbers, cross ties, longitudinals, floor stringers, flooring and mooring posts. The slips were thoroughly repaired, the east side of the structure was sheathed on its whole length with rock elm and black birch, the foundations of the lighthouse were rebuilt, and the lighthouse itself was thoroughly repaired and strengthened. In 1897 a combined waiting room and freight shed 40 feet long and 14 feet wide was erected on the head of the pier at a cost of \$389.38. During the past year the freight shed was moved to the extreme outer end of the pier, enlarged and painted; the face timbers under the slip, which had been broken by ice, were renewed on a height of six feet and part of the slip was covered



with 3-inch planks ; the west side of the pier, at its inner end, was sheathed for a length of 150 feet and the stone and earth approach repaired. The work was done by day labour at a cost of \$480.11.

The total amount expended on this work is \$20,053.34, as follows :—

Purchase.....	\$ 8,244 01
Repairs and reconstruction.....	11,809 33
Total.....	<hr/> \$20,053 34

ST. VALENTIN.

The village of St. Valentin, in the county of St. Johns, is situate on the west shore of the River Richelieu, 12 miles above or south of the town of St. Johns. As this place had no wharf accommodation, the large quantity of hay which is annually exported to the United States ports of Lake Champlain, and the farm produce shipped to St. Johns, had to be conveyed in scows to barges anchored in the channel of the river, which necessitated double handling and correspondingly heavy expense. In order to provide the required landing facilities a sum of \$5,500 was appropriated in 1897, towards the construction of a landing pier at the foot of the Government road leading from the post-road to the Ile aux Noix ferry, and for raising and repairing this road which is annually flooded and damaged during the spring freshets. On the 17th of March, 1897, a contract was entered into with Messrs. Messier and Naylor for the construction of the proposed works. The work was well under way at the close of the year 1896-97, and was completed last year at a total cost of \$6,612.43.

The landing pier, measured on its centre line, is 326 feet long, and consists of a stone and earth embankment 135 feet long and 25 feet wide with side and end slopes of 1 in 1, of a trestle approach averaging 156 feet in length and 20 feet wide, and of a head block of solid cribwork 35 feet long and 60 feet wide along its channel face. The outer face of the head block is 19½ feet in height above the bottom of the river and stands in 9½ feet of water at low water. The Government road was raised above the level of the spring freshets, and properly fenced in.

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BAYFIELD.

The village of Bayfield, in the county of Huron, is situated at the mouth of the river of the same name which empties into Lake Huron, 12 miles south of the town of Goderich. It contains one grist and saw-mill.

*Construction.*—The harbour of Bayfield was originally formed by the municipality of the township of Stanley, and in 1874 when the Dominion Government took the work in hand, it consisted of two piers, 618 and 620 feet in length, 200 feet apart at the outer end, and 330 feet apart at the inner or land end. No statement of the expenditure made by the municipality can be given. In 1874, an appropriation of \$34,000 was made by Parliament for the improvement of this harbour, the municipality of Stanley contributing \$10,000. The work was placed under contract in November, 1874, and proceeded with during the seasons of 1875-76 and 1877, the total expenditure from 1874 to 1882 being \$61,517.55.

The improvements as then completed consisted of a prolongation of the northern pier 105 feet on the outside, with an arm of 156 feet, turned to the south-west ; of a pier on the south side generally parallel to the main line of the opposite ; pier 180 feet

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distant from it, and 553 feet in length, with a return towards the coast line of 153 feet, all the cribwork being 20 and 30 feet wide. The depth of water at the entrance which was originally 11 feet was reduced to about six feet in 1894, due to the formation of sand bars.

*Repairs.*—During the years 1884, 1885, 1886 and 1887 repairs were made to the piers, especially to the northern pier which was close piled on both sides. The small crib at the west end was also repaired, the expenditure for these years being \$6,157. During the last year a sum of \$2,231.36 was expended in the reconstruction of a portion of the northern pier 245 feet in length, and repairing the outer end of the same structure. The whole of the repairs contemplated were not completed at the close of the year and a further sum of \$1,500 was applied for to finish the work.

The total expenditure on this work, not including dredging, is \$70,430.73 and may be subdivided as follows :—

Construction . . . . .	\$61,517 55
Repairs and reconstruction . . . . .	8,913 18
	<hr/>
Total . . . . .	\$70,430 73

### BOWMANVILLE.

Bowmanville, or Port Darlington, is situate on the north shore of Lake Ontario, county of Durham, 43 miles from Toronto by rail on the Grand Trunk division of the main line between Toronto and Montreal. Population 3,500.

*Construction.*—This harbour, which was built by the municipality, consists of two parallel piers built at the mouth of a small creek. The western jetty is built of cribwork 1,180 feet in length and 20 feet in width, excepting at the outer end where the width is 60 feet for the last 240 feet. On this enlarged portion stand a storehouse and a lighthouse. The top of the piers is seven feet above extreme low water level. At the outer end there is about 11 feet of water, the total height of the work being about 19 feet. No statement is obtainable as to the amount expended by the municipality in connection with this harbour. Up to 1897 no construction work was done by the department, but the entrance channel and inner harbour having a tendency to silt up, were maintained by dredging by the Dominion Government.

*Repairs.*—During the year 1897-98 the eastern pier was repaired and some 500 feet of pile protection work was built on the harbour side, to prevent the constant filling in of sand in the channel, and the outer end of the western pier having been destroyed by storms was rebuilt. The total expenditure on this work, not including dredging is as follows :—

Repairs and reconstruction . . . . .	\$3,999 99
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### BURLINGTON CHANNEL.

Burlington Channel, in the county of Wentworth, is simply a cut through a piece of low land which partly separates Lake Ontario from a large sheet of deep water called "Burlington Bay," enabling the vessels to reach the wharfs at the city of Hamilton. Both sides of the canal are lined with piers.

*Construction.*—The work was commenced under commissioners in 1825. It was opened for the passage of vessels in 1830, and completed as originally undertaken in 1832, at a cost of \$124,356.08. The works were afterwards extended, improved, and partly reconstructed by the Provincial Government at an outlay of \$308,328.32, previous to Confederation. From 1867 to 1882 inclusively, the superstructure of the piers having been partly destroyed by fire, was renewed by the Government at a cost of \$30,426.89. It was maintained by the Railways and Canals Department till 1885, when it was placed under the control of the Department of Public Works. The general form of the canal has not since been changed and consists of a cut through a sand bar, about 2,700 feet in length, with an average depth of water of 14 feet at low water,



both sides of the cut being lined with vertical faced cribwork piers. The northern pier has a total length of 2,307 feet and a general width of 20 feet, excepting at the outer and inner ends where there are blocks 30 and 35 feet wide. The southern pier has a total length of 2,710 feet and a general width of 20 feet, excepting at the outer end where there is a cribwork block 30 feet wide for a distance of 30 feet, and at the inner end where the cribwork is of irregular form and the width varies from 25 to 45 feet for a distance of 590 feet. The piers are 103 feet apart at their inner ends, and 174 feet at their outer ends. The top of the piers is 5½ feet above ordinary low water. The southern pier carries two lighthouses ; about the centre of the piers, at the crest line of the sand bank, recesses were left in the cribwork on both sides for a ferry scow, running across the channel. There is also a traffic swing bridge built by the Dominion Government close to the railway bridge, opening on the south side. In 1895, the traffic over the channel had increased to such an extent that it was found impossible to accommodate the public, and this department prepared plans and specifications for the erection of an iron swing bridge. The contract for the masonry of this bridge was let to Mr. Geo. F. Webb, of Hamilton, in August, 1895, for the bulk sum of \$15,799. The masonry work was completed ready for the iron superstructure in April, 1896. On the 28th of January, 1896, another contract was awarded to the Dominion Bridge Co. of Montreal, for supplying and erecting the iron superstructure, etc., for the sum of \$15,290. All the works in these contracts have been satisfactorily completed. A further sum of \$1,500 was paid to the Dominion Bridge company for supplying and installing, by special agreement, an electrical apparatus for operating the swing span ; power is supplied by the Hamilton Electrical Radial railway company.

During the last year, 1897-98, automatic gates to regulate the traffic at the approaches, have been erected. Telephone communication has been made with the "power house," and a "power indicator," for the information of the man in charge, has been placed in the bridge house. Extensive repairs were also made to the piers, which consisted in placing new face timbers, some planking, and earth filling. The whole of the repairs necessary were not completed on the 30th of June ; the material for same was on the ground, and the sum of \$400 was applied for to pay for labour required to complete these repairs.

STATEMENT of Expenditure since work is under control of the Department of Public Works.

Years.	Construction.	Repairs.	Staff and Main-tenance.	Totals.	Description.
		\$ cts.	\$ cts.	\$ cts.	
1885-86.....	.....	210 50	3 20	213 70	Putting in good order ferry landing and procuring new lines for ferry.
1886-87.....	.....	295 79	512 19	807 98	Minor repairs and maintenance.
1887-88.....	.....	123 25	595 13	723 38	" " "
1888-89.....	.....	115 22	702 04	817 26	" " "
1889-90.....	.....	842 78	577 88	1,420 66	" " "
1890-91.....	.....	.....	702 04	702 04	Maintenance.
1891-92.....	.....	310 60	639 96	949 96	Providing channel with a life line and two life buoys. In Nov. the water was so low that it was found impossible to float the scows close to the landings. Temporary pontoons were built and used until the water rose.
1892-93.....	.....	301 70	714 69	1,016 39	General repairs to piers and ferry approaches.
1893-94.....	.....	1,563 52	692 71	2,256 23	New scow built, which was shortly afterwards lost during storm. The old scow was then again repaired at a cost of \$434.80. Extensive repairs to stringers and flooring of the piers were also made.

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STATEMENT of Expenditure since work is under control of the Department of Public Works.—*Concluded.*

Years.	Construction.	Repairs.	Staff and Main- tenance	Totals.	Description.
		\$ cts.	\$ cts.	\$ cts.	
1893-94.....	Bridge, \$1,416 38	.....	.....	1,416 38	Surveys, plans, &c., for proposed bridge.
1894-95.....	.....	800 02	699 96	1,499 98	Repairs made to east pier.
1895-96.....	.....	.....	820 96	820 96	Staff and maintenance.
1895-96.....	Bridge, \$3,816.25	.....	.....	3,816 25	A road approach 400 feet in length was constructed to connect the swing bridge with the public road. On south side of channel a crib 70 x 20 feet was built with superstructure to fill in approaches of the ferry landing.
1895-96.....	Bridge, \$19,937.13	.....	.....	19,937 13	Bridge masonry, &c.
1896-97.....	.....	1,454 24	.....	1,454 24	Repairing piers, retaining walls, fences, &c.
1896-97.....	Bridge, \$16,520.92	.....	1,556 87	18,077 79	Bridge.
1897-98.....	.....	3,525 37	.....	3,525 37	Repairs to piers.
1897-98.....	.....	.....	2,520 58	2,520 58	Bridge staff and maintenance.
Totals....	\$41,690 68	8,547 39	10,738 21	60,976 28	

From the foregoing statement the expenditure since the work was taken in charge by this department can be subdivided as follows :—

Channel proper :	
Construction..	None.
Repairs and maintenance...	\$15,208 15
Bridge :	
Construction, superintendence, etc.....	\$41,690 68
Staff and maintenance..	4,077 45
Total.....	\$60,976 28

COBOURG.

Cobourg is an incorporated town of Ontario, in Northumberland Co., situate on the north shore of Lake Ontario, on the Grand Trunk railway, 92 miles west by south of Kingston, 69 miles north east of Toronto, and is a port of entry. It has several mills, foundries, breweries, and a car factory. Population 5,000.

*Construction.*—The work of forming a harbour at Cobourg was commenced by a company organized under an Act of Parliament in 1829. In 1842 the works were assumed by the Government and held until the 27th May, 1850, when they were sold to the town council of Cobourg for the sum of \$16,000. Prior to the union of the provinces in 1841, the Government had spent \$20,010.72 on this harbour ; and after the union the sum of \$41,999.98 was advanced as a perpetual loan at 6 per cent interest. At the time of Confederation, the work consisted of two piers, the united length of which was 2,047 feet. They were 190 feet apart at the entrance of the harbour, the depth at the outer end of the eastern pier being 14 feet, decreasing from seven to eight feet in the centre of the basin. In 1873 an agreement was entered into with the harbour commissioners for the construction of a pier 1,500 feet long, the commissioners to pay one-third of the cost and the Government two-thirds. Under this agreement the total expenditure was \$79,569.68, of which the harbour commissioners contributed \$25,507.49. In 1881-82 an arm 150 feet in length, in a south-easterly direction, was commenced, and an expendi-



ture of \$8,291.20 was made. The total expenditure by the department since Confederation up to 1882 was \$92,161.89. In 1882-83, 1883-84 and 1884-85, the piers were further extended, especially the eastern pier, and some of the cribwork raised owing to it sinking in soft bottom. The expenditure during these three years was \$47,525.73. In 1885-86 and 1886-87, the sum of \$10,208.01 was expended in building a crib 100 feet in length at the outer end of the eastern pier, and the next 300 feet shorewards, which had settled on an average  $8\frac{1}{2}$  feet, was built up to its proper height; repairs were also made to the western pier. In 1887-88 a contract was entered into for rebuilding a portion of the western pier, which was completed in 1888-89 at a total cost of \$9,871.53, out of which about \$2,000 were for repairs to the western pier of the original harbour. From 1889 up to 30th of June, 1897, the east and west piers were alternately repaired and some portions renewed at an expenditure for these years of \$13,525.59. Some extensive dredging was also done in the harbour, but the expenditure is not included in this report. During the last year, repairs were again made to the shore end of the western pier, and its approach, and the walings and planking on the eastern pier renewed. The expenditure for the year ended June 30th, 1898, was \$2,999.86.

The harbour, as constituted consists of three main piers, the eastern, central and western piers. The eastern and central piers form the old harbour proper. The eastern pier, which is built of cribwork with some enlargements of pile work and gravel filling, is 1,490 feet in length and is built from the shore in a southerly direction, with a return L 140 feet long in a south-west direction. The width, which is very irregular, is 30 feet at the outer end and 60 feet generally at the shore end. The front of this old harbour is lined with cribwork 800 feet long. About 380 feet from this front wall, and from the eastern pier, starts a small pier 305 feet long and from 18 to 35 feet wide, running in a westerly direction towards the central pier. The area enclosed between this short spur, the shore portion of the eastern pier, the front wall and the central pier is called the inner harbour. The depth of water there is from 6 to 13 feet at low water. The central jetty is in very bad repair. It is 1,160 feet long including the approach, and the width is from 30 to 35 feet. The inner and outer ends are respectively 780 feet and 160 feet west of the eastern pier. The western pier, which was built by the Dominion Government, is located about 1,200 feet west of the eastern pier, has a total length of 1,660 feet, and a regular width of 30 feet. It runs from the shore in a southerly direction, with a return L towards the eastern pier, 150 feet in length. The depth of water in this enlarged harbour varies generally from six to 15 feet at low water. The top of the cribwork above low water level is from six to eight feet. On the eastern pier there is a lighthouse and some store sheds.

The total expenditure made by this department on this work is \$176,727.58, and may be subdivided as follows:—

Construction.....	\$ 155,767 16
Repairs.....	20,960 42
Total.....	<hr/> \$ 176,727 58

#### COLLINGWOOD.

Collingwood is situate on the south side of the Georgian Bay, township of Nottawasaga, county of Simcoe, 94 miles by railway from Toronto. It is the terminus of the Northern and Hamilton and North-western railways. There is an extensive trade in grain and lumber and it is the starting point of steamers for Owen Sound, Sault Ste. Marie, Parry Sound, etc. Population 9,000.

*Construction.*—Prior to Confederation a pier and lighthouse was erected, but it was completely swept by a storm in 1872. In 1873 the work of reconstruction was commenced and was completed in 1874 at a cost of \$57,468.43, one-half of which was paid by the department, one-quarter by the Northern Railway Company, and one-quarter by the town of Collingwood. This breakwater is of unusual strength. It is 700 feet in length and finishes, at the deep water end, in a broad pier head 60 feet long

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by 80 feet wide, on which a lighthouse has been erected. The width at the base of the cribwork is 24 feet, receding to 19 feet 6 inches at water line. The portion above water is carried up to the height of six feet, terminating at 12 feet 6 inches in width. The depth of water in the harbour was 11 feet; but as the size of the vessels navigating Lake Superior increased, this depth was found insufficient and during the season of 1879 and following years, dredging was commenced for the purpose of increasing the depth to 14 feet at low water. The total expenditure since Confederation up to 1882 was \$84,636.32, being \$57,468.43 for construction and \$27,167.89 for dredging. In 1882 a contract was entered into with Mr. J. D. Silcox (who subsequently assigned his contract to Messrs Fleming, Lindsay and Burdet), for the construction of a length of 600 feet of a breakwater, extending northwardly from the north wharf, or G. T. R. wharfs. This contract was completed in 1883. In November of the same year another contract was entered into with Mr. Rob. Reed for the sum of \$18,613 for a further extension of 600 feet, which was completed in 1884. In 1884 the work of dredging the channel at the entrance of the harbour was continued and the deepening of a basin at the southern end of the harbour was commenced. In 1885 a new contract was passed with Mr. E. Murphy for another extension of this breakwater for the sum of \$19,000. The expenditure during 1883-84-85 and 1886, on account of construction was \$100,919.58. In 1887-88 a contract was entered into for the construction of stone rip-rap work to close the opening between an old slab wharf and the western end of the outer breakwater. It was completed in 1889 at a cost of \$12,285.35; some boulders, logs, etc., were removed from the entrance channel in 1889 at a cost of \$3,808.09. Since 1889, dredging has been carried on by the department almost every year, deepening the water in the harbour generally as well as at the many wharfs. During last year a contract was let to Messrs. Boon & Armstrong, of Toronto, to deepen and dredge the harbour to 16 feet below low water level. On the 3rd of July, 1897, operations were commenced and continued until the close of the year. Owing to the hardness of the material removed and many breakdowns in the dredging machinery, the work has not progressed as fast as was expected. The expenditure for the year on this contract was \$31,472.39.

*Repairs.*—In 1884-85, repairs were made to the outer breakwater at a cost of \$4,214.71, and from 1893 up to 1898 the sum of \$3,013.21 was expended in minor repairs to the breakwaters and the foundations of the lighthouses. As constituted now the harbour is very large and commodious, being protected on the north and east side by extensive breakwaters, 1500 feet and 3,600 feet in length. Several small wharfs belonging to the town or to companies, are built inside the area enclosed by these breakwaters.

<sup>14318</sup> The total expenditure on this harbour since Confederation is \$248,237.19 and may be subdivided as follows:—

Construction and improvements.....	\$170,673 36
Dredging.....	70,335 91
Repairs.....	7,227 92
	<hr/>
Total.....	\$248,237 19

### GODERICH.

Goderich, in the county of Huron, is situate on the east shore of Lake Huron at the mouth of the Maitland River, about 68 miles from Sarnia and 60 miles from London. It is the terminus of the Buffalo branch of the Grand Trunk Railway, and is a place of considerable importance, partly on account of large deposits of salt found in its vicinity.

*Construction.* The construction of a harbour at this place was first undertaken in 1835, by the Canada company, who held the right under a lease from the Crown, but although a considerable expenditure was made on the works, they were allowed to fall into decay. In 1859 the Canada company transferred their claims on the harbour to the Buffalo and Lake Huron Railway company (now part of the Grand Trunk system), who



in 1862, were granted a new lease from the Crown, under which the company erected extensive harbour works. When it was determined by the Government to establish harbours of refuge on Lake Huron, Goderich was one of the points selected as most suitable, and a survey was made and plans prepared for creating a safe and commodious harbour. The plan adopted may be briefly described as being that of changing the entrance to the harbour by cutting a new channel through the beach and protecting it by cribwork built out to a depth of 17 ft. at low water ; of considerably increasing the area of the harbour by dredging ; and of diverting the channel of the river Maitland by the erection of an artificial bank, so that the river should discharge into Lake Huron through the north beach and not flow into the harbour at all. These works were commenced in 1872 and completed in 1877, the cost being \$465,715.81. In 1881 and 1882, dredging to the extent of \$1,748 was done, and in 1882, \$2,387.06 was spent in protection works at the beach between the northern pier and the breakwater, which was gradually being washed away. The total expenditure up to 1882, since Confederation, was \$471,531.16 on account of construction and dredging.

In 1882-83 the sum of \$22,500.00 was awarded by the official arbitrators, and paid to Mr. S. Platt for damage to his property in connection with the harbour works. On account of the contractor for the construction of beach protection works abandoning his contract, the Government was obliged to assume and proceed with the work, the expenditure during the year on account of construction being \$4,034.04. This beach protection work was completed in 1884 at an expenditure of \$2,860.16. In 1892-93 a contract was entered into with Messrs. Brewder & McNaughton, of Ottawa, to extend the northern pier 410 feet, and the southern pier 100 feet in length and to dredge berths for the same. This work was commenced in March, 1894, and the work completed in November, 1895. In March, 1897, a contract was let to Mr. Luke Madigan, for a bulk sum of \$50,999.00 to reconstruct the whole of the breakwater superstructure, a length of 2,490 feet, and rebuild six cribs 30 by 20 feet and nine cribs 30 by 20 feet; the former to be two feet high and the latter 17 feet high. After a series of delays, on the part of the contractor, an "Order in Council" was passed setting aside the contract on the 25th of April, 1898, and authorizing the calling of new public tenders for the completion of the work. The late contractor, during the last year stripped and exposed about 870 feet of the superstructure at the east end of the breakwater, rebuilding a portion of same 12 feet high. The finished height is 18 feet.

The expenditure on account of reconstruction, during the last year, was \$7,258.41. Some dredging was also done in the harbour.

*Repairs.*—In 1883 and 1884 the breakwater and southern pier were repaired at a cost of \$6,000. These repairs consisted in renewing some planking and guard timbers, and placing some ballast stone in some of the cribs. From 1884 up to 1897, minor repairs to the breakwater and piers were made almost yearly, consisting generally in renewing timbers. The expenditure during these years on account of repairs was \$7,690.23.

*Description.*—The harbour at the present time comprises an inner basin about 25 acres in extent and two parallel jetties forming the entrance from the lake. The northern side of the basin is formed by an artificial bank 2,500 feet in length, composed of very strong cribwork on the Maitland River side and of pile work on the harbour side, the space between the two being filled in and bearing a spur track. The line of crib work serves as a training wall to prevent the Maitland River from discharging into the harbour. The cribwork is sunk generally in 17 feet of water, and its height above low water level is 18 feet. The north entrance jetty is 1,700 feet in length, the width varying from 20 to 30 feet, with a block 40 by 45 feet at the head. The south jetty, starting from the end of the curve formed by the basin is 1,600 feet in length and the width varies from 20 to 40 feet. The jetties are parallel and 200 feet apart, excepting at the outer end of the southern jetty where the entrance is 265 feet wide. The inner angle of the harbour for about 900 feet in length is considerably shoaled up ; the average depth of water in the rest of the basin is 14 feet, and in the entrance channel it varies from 13 to 15 feet. This channel is proposed to be dredged to a depth of 20 feet, including the southern portion of the basin.

## Department of Public Works.

The total expenditure in connection with this harbour is \$590,311.66, and may be subdivided as follows :—

Construction, including some dredging before 1882 . . . .	\$536,825 45
Reconstruction of superstructure (breakwater) . . . . .	7,631 21
Repairs . . . . .	13,690 23
Dredging since 1882 . . . . .	32,164 77
Total . . . . .	\$590,311 66

### HILTON (OTHERWISE CALLED MARKSVILLE).

Hilton, a small village in the county of Algoma, is situate on the north shore of St. Joseph's Island in the north passage of Lake Huron, 5 miles from Stobie, on the Canadian Pacific railway. It contains three churches, two stores, one hotel and two saw-mills. Population 300.

The wharf at this place was originally a cribwork structure built by the municipality. It fell into a dilapidated state, and was at last completely destroyed by the vessels moored to it. In 1884, the remains were sold to Bowker & Co., who rebuilt it on piles. It was later on resold to Mr. A. G. Duncan. This wharf was built at the end of a road in Hilton village, it being 270 feet long over all; the approach varying in width from 18 to 20 feet, the head pier being 90 by 100 feet. The depth at the outer end of the original wharf was 16 feet 9 inches.

*Construction.*—During the years 1886-87 and 1887-88 the department built an addition to this wharf, consisting of a block of cribwork 200 feet long by 30 feet wide, laid close to the outer face of the old wharf, at a cost of \$10,460.30. The Hilton wharf was private property, but strong representations were made to the department in a petition dated 27th December, 1884, "that owing to difficulty of navigation by night in the River Ste. Marie, steamers going to Sault Ste. Marie had to lay over night at Hilton; that the wharf at that place was too limited in extent to afford sufficient shelter to those boats and that the anchorage was not good, the water in the vicinity being deep and the rocks dangerous; and further, that private owners were not in a position and did not need to extend the wharf for their business, especially as no charges were made to vessels lying at the dock." For these reasons the department constructed the extension already described.

In 1897, representations having been made, that the owner of the original wharf extended by the department as above stated, exacted exorbitant tolls for the use of the wharf; that the settlers on St. Joseph's Island were labouring under very great disadvantage on account of the extortionate charges made on their produce, etc., landing at that wharf, it was decided, in order to secured to them fair and just terms, to purchase that portion of the wharf, which was still private property, so that the whole of the work could be under Government management. In 1897-98 the sum of \$5,000 was paid over to Mr. A. G. Duncan for the transfer of his wharf, the storehouse standing thereon and the right of way (to the said wharf from the main road), to the department.

The total amount expended on this work is \$15,460.30.

### KINCARDINE.

Kincardine, in the county of Huron, is situate at the mouth of the Penetangore River, which empties into Lake Huron 31 miles south of Southampton; it is the terminus of the Wellington, Grey and Bruce division of the Grand Trunk railway. Extensive salt deposits are found.

*Construction.*—In 1856, two parallel lines of piers were built, 100 feet apart, the northern pier being 540 feet in length, and the southern one 290 feet. In 1868, the sum of \$4,500 was granted to assist the municipality in completing the southern pier. A considerable sum of money was also expended by the municipality in improving the



harbour, the amount being placed at about \$23,000. The depth of water being found insufficient in the harbour, in 1872 dredging was commenced and continued until 1877, when the whole of the inner basin, about four acres in extent, had been dredged to 12 feet and the entrance to 13 feet. Up to 1882 further dredging was done giving 14 feet in the basin and 15 feet at the entrance. The entrance piers were also further extended, the direction changed and the entrance widened from 130 feet to 200 feet so as to afford greater facility for entering the harbour. In November, 1881, a contract was let for the construction of 790 feet of pile protection work on the south side of the southern pier. At the close of the year 1881-1882, the total expenditure by the department on this work was \$78,049.68, out of which about \$5,000.00 were for repairs, and a large amount for dredging.

The pile protection work was completed in October, 1882.

*Repairs and renewals.*—In 1876, the northern pier having been damaged by a storm, was repaired and the superstructure raised at a cost of \$5,000.00. During the years 1883 and 1884 repairs were made to the end of the northern pier which had been damaged by a schooner; the face of the northern pier was close piled a distance of 665 feet and sheathing was placed on its north side for a distance of 200 feet, to prevent the influx of sand into the channel. The expenditure in this connection was \$6,971.52. A further sum of \$6,155.80 was expended in 1884-85 and 1886-87 in repairing the north and south piers generally, and raising the superstructure. In 1887-88 sheet piling was commenced along the north face of the south pier to prevent its falling into the channel. In 1888-89 this sheet piling was continued on the south and east side of the basin, and pile work protection on the inside of the northern pier was extended a distance of 200 feet northwardly. The expenditure on this sheet piling protection was \$15,000.59. From 1890 to 1896, minor repairs were made to the piers, at an expenditure of \$1,848.78. In 1896-97 the outer end of the south pier was reconstructed at a cost of \$2,265.42. In March, 1897, a contract was let to Messrs Bowman, Bowman & Porter, contractors of Southampton, for a bulk sum of \$11,000.00 to renew the superstructure of the outer end of the northern pier and strengthen the same with sheet piling on the harbour face. The superstructure was completed in November, and the sheet piling in June, 1898. Repairs were also made at the same time to the north and south pier at a cost of \$438.12.

*Description.*—The harbour at present comprises an inner basin into which flows the Penetangore River, and two jetties, 90 feet apart at the inner end and 180 at the outer end.

The east, south and west sides of the basin are built of pile work, strongly braced to anchor piles, and a platform 12 to 16 feet wide resting on walings. This line of piling starts from the bridge over the Penetangore River, on the south side of the river, and runs north-west for a distance of 57 feet. It then turns at an acute angle almost south for a distance of 463 feet forming the shore wall of the basin; then 253 feet in a direction north-west. It then returns northward toward the north jetty a distance of 440 feet, where the south jetty properly starts in a direction almost due west. This jetty is 840 feet in length and is partly composed of pile work and cribwork. The width is very irregular and varies from 12 to 30 feet. The north jetty, 1,470 feet in length from the bridge, is also partly built of pile work and cribwork. The width of the pile work is generally 12 feet, and the cribwork 30 feet. The whole of the cribwork has been pile sheathed. The height of the pier is generally 10 feet above low water level; the depth in the entrance channel was at the end of the year 11 feet at low water, and in the basin from 0 to 13 feet. Dredging is much required in the basin. There are two range lighthouses on the north pier.

The total expenditure since Confederation is \$146,367.89, and may be subdivided as follows :—

Construction including some dredging before 1882.....	\$ 78,049 68
Repairs and reconstruction.....	45,858 03
Dredging since 1882.....	22,460 18
Total.....	<hr/> \$146,367.89

## Department of Public Works

### L'ORIGINAL (WHARF).

L'Original, a post village in Prescott county, on the south shore of the Ottawa River, three miles across the river from Calumet station on the Canadian Pacific railway and 66 miles west of Montreal. It contains, besides the county buildings, four churches, one telegraph office, several insurance agencies, grist and saw-mills, three stores and three hotels. Two weekly newspapers are published in L'Original. Population 1,000.

This wharf is the most important on the river between Ottawa and Grenville, and is the only landing for the freight and passenger traffic of the village and of a large extent of the county. It is used also by the large number of tourists and others visiting the Caledonia Springs. It was built a length of 534 feet, under commissioners of the Provincial Government, prior to the union, 10th February, 1841. In 1866-67, it was found necessary, owing to the filling up of the bay, to extend it 800 feet, or to a total length of 1,354 feet, including the outer block which is 30 feet long and 120 feet wide. The long approach to this outer block was built 22 feet wide, consisting of cribs 10 feet by 22 feet, united by platforms of an average span of 34 feet. The work was done by the municipality, aided by a grant of \$2,000 from the Provincial Government.

In the spring of 1884, part of the superstructure was carried away by the ice, and was rebuilt by this department during the years 1883-84-85 and 1886 at a cost of \$7,266.49. The vote of 1883-84 was supplemented by a grant of \$1,000 from the municipality. The above amount also covers the expense of dredging made by the "Nipissing" in front of the pier during the seasons of 1884 and 1885.

In 1896-97 an examination of the wharf was made at a cost of \$191.15. It was found that the approach was in a dilapidated condition and could not long stand the constant travelling of heavy loads over its uneven roadway and that unless it was rebuilt this landing would have to be abandoned. Ten of the shore cribs had also been moved bodily below their original positions for distances varying from three to 22 feet; and parts of eight others were shifted from their foundation and partly demolished. It was therefore decided to rebuild the whole approach 1,323 feet long, from the shore to the outer block, along the lower side of the old approach. Plans and specifications were prepared and tenders called. In June, 1897, the contract was awarded to Messrs. J. N. Munroe and W. Murray, contractors, for the sum of \$13,417.12. The works included in this contract consisted of: 1. A stone and earth embankment 623 feet long and 25 feet wide at the top, with side slopes of 1 in 1 and built up to an elevation of  $19\frac{1}{4}$  feet above extreme low water. 2. A trestle approach 700 feet long and 20 feet wide, with bents 12 feet apart and composed of six piles driven 15 feet in the bottom, and covered with 4 inch planks well secured to the floor stringers.

At the end of the year 1897-98, the contract work was not quite completed, there being a number of braces yet to be laid and secured on each side of the bents.

The amount of \$13,850.27 expended on this work, also covers the purchase of materials for the reconstruction of the outer block (120 feet by 30 feet) from the low water level.

The total amount expended on this work by the department is \$21,307.91, as follows:—

Fiscal year 1883-84, reconstruction.....	\$ 5,331 90
“ “ 1884-85, “ .....	909 69
“ “ 1885-86, “ .....	1,024 90
“ “ 1896-97, “ .....	191 15
“ “ 1897-98, “ .....	13,850 27
Total.....	\$21,307 91

### MEAFORD.

Meaford is an incorporated town in the county of Grey and is situate on the west side of the Georgian Bay, 18 miles west of Collingwood, and 20 miles to the east—



ward of Owen Sound. It is the terminus of the northern division of the Grand Trunk railway. Population 2,500.

*Construction.*—Prior to Confederation a pier 500 feet long, and having 14 feet of water at its outer end, was built by the local authorities, aided by a grant of \$6,000 from the Government. This pier which is on the west bank of the Big Head River, emptying into the harbour, was extended during 1874 and 1875, 160 feet, and an arm 200 feet long was built in a north-easterly direction, in order to afford protection against north east winds. A breakwater 410 feet long was also built on the east side of the river. The cost of these works was \$22,899.29, of which three fifths was paid by the Government, and two-fifths by the municipality of St. Vincent. In 1878, the sum of \$250 was expended in dredging; and in 1880 and 1881, \$2,564.94 was spent by the department in dredging to 12 feet inside the western pier, deepening the channel to the inner harbour and dredging a portion of it to 11 feet. In 1884 and 1886 further dredging was done, and in 1887-88 the town contributed \$3,000 and the Government \$5,000 to complete the dredging in the inner harbour to 13 feet, and to dredge a 100 foot channel, 14 feet deep, to it from the outside. In August, 1889, a contract was entered into for the construction of the following works:—

1. Cribwork, 80 feet in length and 20 feet in width at the north end of the eastern breakwater. 2. Cribwork, 160 feet in length and 20 feet in width, at the south end of the eastern breakwater. 3. Sheet piling, 200 feet long, at the east side of the entrance to the inner harbour. This work was satisfactorily completed in May, 1890, at a cost of \$4,987.84, and a space between the breakwater and the shore was also filled with stone. A portion of the harbour was also dredged to 12 and 13 feet in 1895 and 1896. During the last year a contract was let to Mr. James Sparling, of Meaford, for the construction of pile protection work, 340 feet in length, on the west side of the harbour. At the end of the year active operations had not been commenced, but the contractor was engaged in obtaining the necessary materials for the work.

*Repairs.*—In 1882, a contract was entered into with Mr. Robert Reed for repairing the inshore portion of the west pier, which consisted principally in sheet piling about 850 feet of the old cribwork. This was completed in 1883 at a cost of \$12,612.23. In 1892 and 1893, an expenditure of \$5,492.42 was made in repairing and rebuilding about 560 feet in length of pile protection work.

*Description.*—The harbour may be subdivided in two distinct portions, the inner and outer harbour. The inner harbour which is established in the Big Head River, is about 800 feet long and from 150 to 260 feet wide, having a total area of about four acres. The depth of water varies from four to 11 feet at low water. The west side is formed and protected by a line of pile work, 1,170 feet in length, starting from the highway bridge across the river, and joining the west pier at a point 250 feet distant from its shore end. The east side is not protected by pile work, excepting at the entrance to the inner basin, where there are about 200 feet of piling built in connection with fish houses. The outside harbour is formed by two cribwork jetties, one on each side of the river, about 500 feet apart at their shore ends, with an entrance from the lake 170 feet wide. The east jetty is 635 feet long and 20 feet wide. The west jetty is 600 feet in length with an extension to the east toward the east jetty 220 feet long, making a total length of 820 feet. Its width is from 25 to 28 feet. There is a lighthouse at the end of the extension. The head of the jetty is in 12 feet of water.

The total expenditure in connection with this harbour is \$68,561.40 (out of which \$10,000 was contributed by the municipality of St. Vincent), which may be subdivided as follows:—

Construction .....	\$31,358 38
Repairs and rebuilding.....	18,104 68
Dredging .....	19,098 34
Total.....	\$68,561 40

## Department of Public Works.

### OWEN SOUND.

Owen Sound, in the county of Grey, is situated at the mouth of the Sydenham River which flows into the head of Owen Sound, an arm of the Georgian Bay. The town is the centre of an extensive agricultural district, and is the terminus of the Grand Trunk railway branch of the Georgian Bay and Lake Erie division also of the Canadian Pacific railway, Toronto, Grey and Bruce division. There are several lines of steamers running to and from Owen Sound. Population, 6,500.

*Construction.*—Prior to Confederation the harbour was formed by the municipality of Owen Sound, and in 1856 and 1866 grants were made by the government to assist in improving the channel of the Sydenham River, from its mouth up to the town of Owen Sound. These grants amounted to \$1,300. In 1874, a survey of the river was made, with a view to improving the channel; and, in 1874 and 1875, the sum of \$10,367.55 was expended by the department in making a generally straight channel, 150 feet wide, from the wharf at the foot of Peel Street to the outer light, a distance of three-quarters of a mile. The depth of water obtained was 10 feet at low water. In 1876 and 1877, a channel was dredged from the dry dock to a short distance outside of the outer light, a length of about 2,000 feet. The channel was about 150 feet wide and had a depth of 12 feet. Cost \$6,589.77. In 1879, a further sum of \$1,951.30 was spent in dredging a narrow channel, 65 feet wide to a depth of 14 feet.

The growing trade of the place demanding greater harbour accommodation, and the increased size of the steamers navigating the lakes requiring a greater depth of water in the harbours, it was decided to make considerable improvements in this harbour, and the town of Owen Sound agreed to contribute \$13,000 towards the cost. These works consisted in the building of two parallel rows of pile work, 200 feet apart, extending from the shore a distance of 600 feet, together with about 1,000 feet of bank protection, and the dredging of the channel of the river Sydenham, from the upper end of the steamboat wharf to its mouth, and thence to 14 feet at low water, a distance of 5,000 feet.

The expenditure in connection with this pile protection work was in 1881-82, \$29,942.57

In 1882 and 1883, the pile work on each side of the entrance was strengthened by the placing of brush and stone; and a length of 3,000 feet of the channel, from a point below the outer light to the southern end of the pile work, at the entrance, was dredged to a depth of 16 feet. The dredging was continued in 1883 at a cost of \$6,583.05, but in March, 1884, owing to the shifting nature of the bottom, soundings showed an average depth of only 14 feet over the channel opened.

In 1884-85, a depth of 16 feet was obtained at a cost of \$9,596.60. The foundations of the inner lighthouse were also protected with large stones at an expenditure of \$237.50. Dredging was continued from year to year at a large expenditure, in the inner harbour, and on a new channel approach to the harbour. The material taken from the bed of Owen Sound harbour, both in the river and at the approach, is a fine alluvium earth and still finer sand. The material runs into the cuttings made by dredging and continues to do so until the sides of the cuttings form a natural slope. This accounts for the large amount of dredging done at this place, and the comparatively small results.

In 1890, 1891 and 1892 a large amount of protection pile work was done in the river. In 1894, a contract was entered into with Messrs. Porter and Canon, of Wiar-ton, for the construction of sheet pile revetment work in front of the esplanade, on the west side of the harbour, a distance of 1,550 feet. This work was completed at the end of 1895. In 1896, Messrs. Canon, Sadlier & Co.'s plant was engaged dredging the harbour to 19½ feet depth at low water where most required. During the past year this work was assumed by the dredging plant of "The Owen Sound Dredging and Construction company" and continued until the close of the year 1897-98. The expenditure during the year on this account was \$14,401.24.

During the past season the largest vessels sailing the lakes, have been able to use the harbour of Owen Sound. Protection work on the west side of the entrance



channel is much required to prevent the filling in of material brought down by the Pottawatamie River.

The total expenditure made by the department in connection with this harbour is \$254,367.06, and may be subdivided as follows:—

Construction and reconstruction.....	\$123,377 27
Dredging.....	130,989 79
Total.....	\$254,367 06

#### PENETANGUISHENE.

Penetanguishene, in the county of Simcoe, is situate on the north of the eastern peninsula in Georgian Bay, formed between Nottawasaga Bay and the waters of the Severn River, 40 miles N.N.W. of the town of Barrie. It is the terminus of one of the branches of the Grand Trunk railway, and a large quantity of lumber is shipped thence from the north and east shores of the Georgian Bay.

*Construction.*—During the summer of 1880, dredging was done at the western point south of the Reformatory wharf, and to the north of the wharfs at the village, to give a depth of water of 16 feet in the channel, at an expenditure of \$2,624.07.

During 1888-89, a pile structure, 12 feet in width and 850 feet in length, was constructed in an average depth of 12 feet of water. Behind this structure an embankment 30 feet wide was formed with brush, stone and earth, giving to the wharf so completed a total width of 42 feet. In addition to this wharf a similar structure 350 feet in length was built up at the foot of Barrie Street. The expenditure in connection with this work was \$20,330.70. The sum of \$9,849.64 was also expended in dredging to 16 feet of water in the harbour and along the wharfs during the years 1890, 1892, 1895 and 1896.

*Repairs.*—In 1896, the sum of \$597.28 was expended in repairing and strengthening the piling. These repairs were continued in 1897-98, and completed at a cost of \$796.57; at the end of the year the wharf was in a very good state of repair.

The total expenditure in connection with this harbour may be summarized as follows:—

Construction.....	\$20,330 70
Repairs.....	1,393 85
Dredging.....	12,473 71
Total.....	\$34,198 26

#### PORT ARTHUR.

Port Arthur is situated on Thunder Bay at the northern end of Lake Superior. It is an important station on the Canadian Pacific railway. A long breakwater, built in front of the town, forms a harbour and protects the wharfs on shore.

*Construction.*—In 1884, 2,000 feet in length of the above mentioned breakwater was commenced and carried to completion in February, 1886, at a cost of \$155,661.60. In February, 1887, the construction of a further length of 1,600 feet, in addition to the work completed in the previous year, was commenced, and finished in November, 1888; and a talus of stone was placed against the outside of the work, adding very much to the strength of the structure. In October, 1888, a contract was entered into with Messrs. Kirby and Stewart for the construction of a further length of 1,500 feet of breakwater, with block piers at each end, to the westward of the work already completed; an opening of 350 feet in width being left between the old work and the new to permit vessels to enter the port. This work was commenced in May, 1889, and completed in 1890. The talus of stone commenced in 1888 was also continued along the front of the work built under the first contract, it having been found that the bottom

## Department of Public Works.

was eroding under the action of seas during heavy gales. The two above mentioned extensions, including the stone talus, were completed at an expenditure of \$315,641.87. From 1889 to 1898 an expenditure of \$15,445.24 was made in dredging the opening left in the breakwater to 18 and 19 feet at low water, and giving a depth of 16 feet of water in the harbour in front of some of the docks.

*Repairs.*—In 1890-91, the ends of the blocks were covered with sheet piling, and other parts of the breakwater which had been damaged by ice were repaired. Some slight repairs were also made in 1892 and 1895. During last year, repairs were made to the breakwater, where it had been damaged by an “ice-shove,” the previous winter, and by a vessel named the “Yuma” running into the superstructure. Work was commenced in April, and completed in June at an expenditure of \$1,000.

There are still some boiler plates, which were washed off the breakwater, and have been since picked out of the water, to be replaced, and it will require a small sum for this purpose.

*Description.*—The construction of the breakwater has converted what was formerly a dangerous and exposed roadstead to a safe and commodious harbour. There are three entrances to the harbour. The western entrance is about 1,800 feet in width, with a depth of water of 12 to 18 feet at low water. The middle entrance is 350 feet in width and has a depth of water of 17 feet. The eastern entrance has a depth of water of 17 feet and a clear width of 250 feet. The depth of water in the basin varies from 14 to 18 feet. The total length of the cribwork in the breakwater is 5,250 feet, including the return blocks at the middle entrance and at the western end of the breakwater. The width is 30 feet, and the total height 25 and 26 feet. It is sunk generally in 17 and 18 feet of water.

On the lake side the cribwork is made vertical up to about low water line, and from there up to the top it is finished with a slope of 1 in 1, strongly sheathed, and the angles protected with boiler plates. The lake side of the breakwater is heavily riprapped. It may here be mentioned that this breakwater has successfully withstood the force of breaking seas driven by gales travelling at the rate of 54 miles an hour, and ice shoves from the outer bay, when the ice has been pushed completely over the structure and left remaining thereon to a height of 19 feet.

The total expenditure in connection with the harbour may be summarized as follows :—

Construction.....	\$471,303 47
Repairs.....	6,561 61
Dredging.....	15,445 24
Total.....	<hr/> \$493,310 32

In 1872, in connection with the “Dawson Route,” a wharf 600 feet long with a wing 200 feet long, was also built at Port Arthur, then “Prince Arthur’s Landing,” but its cost was included in the “Dawson Road” expenditure.

### PORT ROWAN.

Port Rowan is situate on the north side of Lake Erie in the inner bay of Long Point; it is 21 miles from the town of Simcoe in the county of Norfolk. Population 1,000.

Some slight repairs to the landing pier at this place were made during the year, at an expenditure of \$90.05.

The following materials were used in the repairs :—

3 cords of stone.

2 loads of brush.

72 feet of white oak.

951 feet b.m. pine plank and 25 of lbs. iron.



## THORNBURY.

Thornbury, an incorporated village in Grey county, is situate at the mouth of the Beaver River, which empties into Georgian Bay; on the Meaford branch, Grand Trunk railway, eight miles from Meaford and 19 miles from Collingwood. It contains four churches, 20 stores, two hotels, two grist, one saw, one woollen and one planing mill, two printing offices issuing weekly newspapers, and telegraph and express offices. Population 900.

Many years ago a pier was constructed at this place by the residents of the locality, but it was allowed to fall out of repair and become useless.

*Construction.*—During the session of 1881, the sum of \$7,000 was voted to construct a pier on the western outlet of the Beaver River, and to dredge a basin 100 feet in width to 10 feet depth on its eastern side. This grant was supplemented by the sum of \$7,000 furnished by the town of Thornbury, and the work was placed under contract. The pier was built of solid cribwork, for a length of 425 feet out from the shore into Georgian Bay; the outer portion or landing block is 145 feet in length and 35 feet in width, and the remaining portion of 280 feet comprising the approach is 18 feet in width. This work was completed during the year 1882-83, at a cost of \$14,136.37. In 1883-84-85, the sum of \$8,085.09 was expended in the construction of protection works on the eastern side of the basin. The work consisted in the construction of a close pile jetty extending 400 feet out from the beach into the lake, forming an artificial harbour. During the year 1886-87, a row of piling was driven from the inner end of the landing pier, in a south-westerly direction for a distance of 280 feet on the western shore of the Beaver River, at a cost of \$1,818.48, to prevent the beach being cut through by seas. In 1892-93, a sum of \$2,981.27 was expended in the construction of 150 feet in length of pile protection work, and in forming a slip in the landing pier. In 1897-98, it was decided to build a small breakwater, in the harbour, in order to shelter small craft. The breakwater is 190 feet in length and 16 feet wide and was built at a cost of \$978.06.

*Dredging.*—The dredge "Challenge" in 1886 opened a channel in the shoal between the dock and the breakwater, removing 8,820 cubic yards of boulders, gravel and sand at a cost of \$1,185.55. During the year 1887-88-89 and 91-92, some extensive dredging was done to improve the harbour and make it easier of access, at a cost of \$7,265.23.

*Repairs.*—In 1891-92, repairs were made to the approach of the landing pier. The work consisted in removing the wreck of 100 feet of old pile protection work, on the inside of the approach to the pier, building the same with new material and making up the embankment with gravel. The work was done by day labour at a cost of \$624.99. The landing pier, which was much in need of repair, was still further damaged in May, 1893, when an unprecedented rainstorm of two days duration caused a heavy flood in the Beaver River, carrying away all the mill-dams in the vicinity of Thornbury. The debris brought down by the stream and current undermined the shore end of the landing pier, and the structure, for a distance of 160 feet out, sank and fell in towards the harbour. During the years 1893-94 and 1894-95, \$6,387.18 were expended to put the landing pier in a complete state of repair. In 1895-96 and 97, an expenditure of \$46.05 was made for slight repairs.

The total expenditure incurred on this harbour may be summarized as follows:—

Construction (including \$7,000 furnished by the town of Thornbury).....	\$27,999 27
Dredging.....	8,450 78
Repairs. ....	7,058 22
Total .....	<hr/> \$43,508 27

## Department of Public Works.

### TOBERMORAY.

Tobermoray is a natural harbour of refuge situate at the extreme northern end of the western peninsula, in the county of Bruce, and is the only place on the north shore of Lake Huron that gives refuge to vessels in stormy weather.

Orders were issued early in the past season to renew the ring bolts, fenders, eye-bolts and booms, which had become loosened, or carried away. Owing to the place being out of the line of call for steamers, considerable delay occurred in obtaining and shipping the materials required, and the work was not completed until last November. Twenty six chains, with welded links ; four eye-bolts and rings ; five ring bolts and wedges ; 10 fender caps with bolts in each ; 10 booms, 370 feet in length and 10 fenders have been renewed and placed in position, at a cost of \$203.75.

### TOLSMAVILLE.

Tolsmaville is situate on the north east side of Cockburn island, in the north channel, Lake Huron, a short distance westerly from the north end of Mississaugua Straits. It is about 90 miles, in a southerly direction from Sault Ste. Marie.

During last year some necessary repairs were made to this wharf. Some 12,800 f. b. m. of lumber and 200 lbs of iron was used in the work.

Total expenditure during the fiscal year :—

Materials.....	\$247 70
Labour and superintendence.....	167 25
Total.....	<hr/> \$414 95

### TORONTO HARBOUR.

The harbour of Toronto is situate on the north shore of Lake Ontario, and is formed by a large circular bay about  $1\frac{1}{2}$  miles in diameter, separate from the lake by a low island (formerly a peninsula), about six miles long, making a safe and well sheltered harbour capable of containing a large number of vessels.

In 1788, the harbour was described to be nearly two miles in length, from the entrance on the west to the isthmus between it and a large morass to the eastward. The breadth of the entrance was about half a mile, but the navigable channel for vessels was only 1,500 feet, having a depth of from 18 to 21 feet of water. In 1832, Bouchette stated that the peninsula, now Toronto island, was a narrow slip of land, in several places not more than 180 feet in breadth, but widening towards its western extremity to nearly a mile. In 1833, changes in the state of the harbour were apparent, and the necessity for its preservation engaged the attention of those interested ; no action, however, was taken at the time. In 1850, the harbour was put in commission, and early in 1852, it was reported that from observations made and soundings taken during twenty years it was ascertained that the navigable channel had narrowed down to about 200 feet. In 1853, an opening was made during a storm through the narrow beach at the eastern end of the harbour, which closed again in a short time afterward, although attempts were made to give permanence to the beach, the whole was swept away and the eastern entrance was formed.

In 1859, the harbour master reported a depth of eight feet of water in the eastern channel. In 1860, the western channel was dredged to a width of 400 feet, and an average depth of 12 feet. In 1862, the eastern entrance had increased to half a mile in width, and a bar had formed which had shoaled the water. Between 1874 and 1880, the sum of \$49,120.90 had been expended, principally in increasing the width and depth



of the western entrance, and a certain amount of blasting for the removal of solid rock was executed.

In 1881, an examination of the harbour was made by Mr. Jas. B. Eads, C.E., who submitted a carefully prepared report, in which he advised the closing of the eastern entrance, to obtain and maintain a depth of 18 feet at low water. Before any action could be taken on these suggestions, the marshes bounding the eastern side of the harbour, and the whole of the southern shore of the island were damaged to such an extent as to necessitate a complete departure from the plans prepared by Mr. Eads. As attention had to be paid to the protection of the eastern side of the harbour, and the preservation of the eastern portion of the island, where it was the narrowest, and through which several breaches had been made, in 1882, work for the protection of the harbour, extending from the Don southwardly to Fisherman's island, and for the protection of the island, over a length of 6,500 feet, was commenced, and was brought to completion in 1885.

In 1889, a contract was entered into for improving the eastern entrance and the continuation and completion of the harbour protection. These works consisted in building 1,650 feet of cribwork, to partially close the eastern gap from Fisherman's island, up to the new eastern channel; in protecting and maintaining the channel by the construction of two rows of cribwork, respectively 2,420 feet and 2,280 feet in length, 400 feet apart, and by dredging between these two rows of cribwork to a depth of 16 feet at low water. It was also decided to rip-rap with heavy stone the breakwater at the island, this last work being done by day labour, under direct charge of the department. All the above mentioned works, outside of the dredging, were practically completed in 1896 only.

During the winter of 1896-97, severe storms caused the settlement of the north and south ends of both west and east piers. The north end of the west pier having settled below lake level, it was found necessary to take down and rebuild some 120 feet of the superstructure, and to place brush mattresses and large stones around the end and channel face to protect it from further scouring. This was also done to the north and south ends of the east pier. Settlement having also taken place along the channel side, an extra course of timber was put on and the waling taken off and replaced to proper level. During the past year 1897-98, the north end of the east pier having again settled considerably out of line, it was found necessary to take down 200 lineal feet of the superstructure and rebuild it, after the pier had settled back into place by excavating a seat for it with the city's pumping dredge. Brush mattresses, 32 feet in width, were sunk along the face of the pier on the channel side, for 210 feet in length to protect it from scouring, and no settlement of the pier was noticeable at the end of the year.

Repairs to the breakwater were also commenced and are now being carried out. A bar, formed during the winter, south of the west pier, contracting the channel to a little over 100 feet, was removed, and some shallow portions of the channel deepened. There is now a channel 190 feet in width, having a depth of 16 feet below zero of the gauge, from the end of the west pier outward. At the end of the year the dredge was employed in deepening the channel between the piers to 16 feet below zero. Three groynes composed of layers of brush mattresses and sunk with stones were also constructed on the south shore of the island, west of the breastwork, to protect the beach. These groynes withstood last winter's storms and made considerable land in their immediate neighbourhood, but they are too far apart to be of much service, as the sea did much havoc to the shore line lying between them, washing away a strip of beach, and uprooting several trees, besides doing damage to the sidewalk. They demonstrate clearly, however, the importance of others being put down closer together if the beach is to be retained. The sum expended on these works during the last year is \$18,442.76.

The total expenditure, by this department on this harbour, is \$1,115,341.28, including dredging, staff and maintenance.

# Department of Public Works.

## PROVINCE OF MANITOBA.

### WHARFS ON LAKE WINNIPEG.

In 1897, Parliament revoted the sum of \$8,500.00 which had been appropriated at its second session of 1896 for the construction of wharfs on Lake Winnipeg; but no expenditure was incurred for this purpose, during the year ended 30th June, 1898.

In this connection it may be stated that a project has been submitted for the construction of a public wharf, 600 feet long, at Gimli, on the west shore of Lake Winnipeg, that would reach eight feet depth at mean low water. The proposed structure is to consist of an outer portion of solid crib-work, 20 feet wide and 400 feet long, and a stone approach from the shore 200 feet long; the top of planking to stand 4 feet above mean low water level.

Gimli is the most important Icelandic settlement on the west shore of Lake Winnipeg and is 62 miles north of the City of Winnipeg.

The object of building this wharf would be chiefly to afford to the inhabitants of the municipalities of Gimli, Woodlands and Rockwood, proper facilities for carrying on the lumber trade and the fishing industry. In summer, communication can only be had by water with these localities from Winnipeg, as the colonisation road is still almost impassable on account of its unfinished state and the swampy nature of the country traversed.

## PROVINCE OF BRITISH COLUMBIA.

### COLUMBIA RIVER.

The headwaters of the Columbia River are a series of small lakes lying between the Rocky Mountains and the Selkirk Range, a little south of the 50th parallel of north latitude. The upper lake is separated from the Kootenay River, which takes its rise in the heart of the Rocky Mountains, but a few miles north of the 51st parallel—by a low sand and gravel divide, 2,700 feet above sea level, a mile and a half wide. The Kootenay at this point, at an ordinary stage of water, is about nine feet or so above the level of the Upper Columbia Lake. While the Kootenay flows in a south-easterly course to the boundary line, the water of the Columbia takes an entirely opposite direction towards the Canadian Pacific Railway at Golden, about one hundred and thirty miles north-west of Canal Flat.

This portion has been known as the "Columbia River above Golden," and is navigable now for steamers of light draught as long as the river is free of ice.

From Golden, the Columbia follows on—about the same course—the line of the railway on the south side, to Donald, where it crosses to the north side of the railway and continues to follow it down to Beaver. Steamers can, it is believed, run down from Golden to Donald, but not to Beaver. Leaving the railway at the latter place, the river continues the same course to the Big Bend; here it doubles and takes a southerly course to Revelstoke, where it again meets the Canadian Pacific Railway. The distance from Beaver round the Big Bend is about one hundred and seventy-four and a quarter miles.



About thirty miles below Revelstoke, the river debouches into Upper Arrow Lake, over a fan-like bar of moving sand. After passing through the lake—which is about forty-three miles long—the river is entered again; thence it continues to flow for about eighteen miles, down to the Lower Arrow Lake; and extends southwards forty-eight miles, more or less past this lake. The river between the lakes is called “The Narrows.” Both of these lakes hardly exceed four miles in width in the widest part. From the Lower Arrow Lake to the Kootenay Rapids—twenty-one miles—the river is deep and wide, with no very acute bends, but a strong current. This portion is known as the “Columbia River, below Revelstoke.”

Continuing through the rapids, passing the mouth of the Kootenay River on the left, the Columbia continues a wide and swift river, with many sharp bends, divided in one or two places by rock islands, to the international boundary below Fort Sheppard, a distance of 32 miles from the head of the rapids. The general direction is due south. This part of the river is known as the “Columbia River, below Kootenay.”

The valley of the river, from the “Big Bend,” south, lies between two ranges of mountains, the Selkirks, to the left and the Gold Range to the right. The mountains lose, to a great extent, their rugged appearance as the lakes are reached.

The banks and bed of the river are generally gravel and sand, thickly timbered, with an occasional rock bluff intervening.

*Improvements above Golden.*—Most of the records relative to this work having been destroyed by the fire which consumed the Department's offices, at New-Westminster, on the 11th of September, 1898, it is impossible to report the details of operations, for the past year, ended 30th June, 1898.

The work was confined to the Columbia River between Golden and Lake Windermere, and consisted chiefly in repairing and extending the existing dams, in order to confine the river to the main channel. All the labour was furnished by the crew of the dredge “Muskrat” and comprised blasting rocks, cutting and driving piles, and getting out brush for the dams. Dredging was also done in a most satisfactory manner through a sand bar which had formed below the salmon beds at the foot of Lake Windermere.

The expenditure in connection with the dredge “Muskrat” during the past year is as follows :—

Wages.....	\$2,838 96
Provisions.....	917 16
Wood.....	49 50
Material.....	623 91
Contingencies.....	303 48
Total.....	\$4,733 01

*Improvements above Revelstoke.*—The work of improving the canyon of the Columbia River, above Revelstoke, consisted of blasting rocks which were a source of danger to navigation.

The following are the details of the expenditure in connection with this service, during the year ended 30th June, 1898 :—

Wages.....	\$1,672 00
Material.....	300 00
Total.....	1,972 00

*Improvement between the Arrow Lakes, or below Revelstoke.*—This work during the past year consisted chiefly in dredging a channel through a sand bar known as the Slide Bar, in the Columbia River, about  $\frac{1}{4}$  mile below Swiftwater Riffle, and through the sand bar at the Swiftwater Riffle.

In both cases a channel, 50 feet wide by six feet deep at extreme low water, was dredged with good results. In fact no delays by grounding were experienced at these points by the steamers plying between Arrow-head and Robson, even during the

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lowest stage of water. In previous years, great difficulty was always encountered in this section of the narrows at low water. Included in the item for material, \$2,071.88 are the cost of a car load of wire, \$1,036.74, and of certain tools, \$312.81. These tools and wire were purchased to be used in connection with the construction of a projected wing dam. Nothing could be done on this dam on account of an unexpectedly early rise in the river. The dredging was done with the aid of a Canadian Pacific Railway Co's railway steam shovel, fitted temporarily on a scow. The scow, so equipped, was towed by a tug hired for the purpose.

The details of expenditure for the year ended 30th June, 1898 are :—

Wages.....	\$1,827 20
Tug hire.....	1,700 00
Material including one carload of wire and tools.....	2,071 88
Total.....	<hr/> \$5,599 08

### DUNCAN RIVER.

The Duncan River rises in a meadow or depression lying about the centre of the Selkirk Range, a few miles south of the Canadian Pacific Railway.

From this depression flows also: (1) the Beaver northward to join the Columbia River at a point where the railway leaves it to climb the eastern slope of the mountains, and, (2) the north fork of the Spillamacheen south-eastwardly to join the Columbia 40 miles or so, in the latter direction, from Golden, a station on the Canadian Pacific Railway, at the junction of the Kicking Horse and Columbia.

Following a tortuous course for 56 to 60 miles through a narrow alluvial valley, from three-quarters to one mile wide, bearing one point east of true south, the mountains on both sides rising precipitously from the plain, the Duncan widens out into Upper Kootenay Lake, 10½ miles long by from three-quarters of a mile to a mile wide. Two miles from the lower end of this lake, the Lardo—a rapid and unnavigable affluent from the north-west, joins the Duncan at an acute angle, and 7 miles further on, the combined waters enter Kootenay Lake about 21 miles from Kaslo, a town situated on the west shore. Below the confluence of the two streams the river has been called the Lardo, notwithstanding the fact that the Duncan, being very much the larger, is properly the main river. To prevent confusion, the river will be referred to hereafter as the Duncan, the Lardo being treated as the tributary.

Kootenay Lake, 1,730 feet above the sea, is about 72 miles long by about an average width of 1¾ miles. It is the natural and, at present, the only available route by which the trade of the great southern central valley of the Selkirk Mountains, north of the boundary line, can be carried. There are two points on the lake waters at which transfers can be exchanged with the great railway lines. The first is Nelson, situated on the west arm or outlet of the lake, 36 miles from Kaslo, where freight and passengers are transferred in connection (1) with the Nelson and Fort Sheppard Railway and the Spokane Railway in the state of Washington, and (2), partly by rail and partly by boat, with the Canadian Pacific Railway at Revelstoke. The second is Bonner's Ferry, a small town in the state of Idaho, on the banks of the Kootenay River, about 50 miles south-east, by the river, of the boundary line, where connection is made with the Great Northern Railway line.

To accommodate the lake traffic there are three steamboat lines giving a daily service between points north of the line, with a bi-weekly service in summer, reduced to a weekly in winter, to Bonner's Ferry.

At Kaslo, a small line of railway called the Kaslo and Slocan, 3 feet gauge, said to be in the interest of the Great Northern, has been constructed to tap the Slocan country, lying west of Kootenay Lake, in competition with the Canadian Pacific Railway now operating a line, to the same interior points, called the Nakusp and Slocan, 4 ft. 8½ in. gauge. Nakusp, being situated on the east side of the Upper Avon Lake, connection is made by water thence with the Canadian Pacific Railway at the head of the



lake. If an amicable arrangement could be arrived at between these rival lines, of which there is a remote possibility, the Duncan River country would be in closer connection with the Canadian markets.

To meet the requirements of the increasing outputs of these mines conveniently situated within easy transportation distance of the lake, two large smelters have been erected; one by American capital at Pilot Bay on the east shore of the lake, opposite the west arm or outlet; and the other at Nelson, by the Hall Mines company, an English corporation, which has been built primarily to treat the ores from their own property lying on Toad Mountain south of Nelson, and also for the purpose of custom smelting.

It is contended that the Duncan country is as rich in minerals as any other part of the district, but, owing to the difficulties and dangers attending the transportation of freight, it is deprived of the advantages of reasonable freight rates, and its development is retarded. To mitigate the difficulties under which this section labours, it is proposed that the Duncan River, from the Kootenay Lake, be made navigable as far as practicable.

All the above claims are simply prospects, no development work having been done.

At the mouth of the Duncan River, on Kootenay River, there are extensive sand bars, through which by many channels the river finds the lake, the main channel being close to a rock bluff on the west side. There was not, on the 7th September, 1895, more than two feet of water in the deepest channel. Upon entering the river the low land bordering the banks is found to be of alluvial character, covered at first with alders and willows, which afterwards give place to larger and merchantable timber. The current varies from two to six miles an hour and cuts the banks rapidly on the convex curve of the river. At intervals, up to the mouth of Cooper Creek, sharp, short pitches or riffles, where the river splits, are met with; the difference in level varying from ten inches to two feet. The most serious of these riffles and splits, which will always, at low water, unless ameliorated, prove obstacles to navigation, occur below the mouth of Cooper Creek.

The difference in level between the lake and the mouth of the Lardo, a distance of  $7\frac{1}{2}$  miles, is estimated to be approximately 28 feet.

Duncan City, consisting of three houses with no permanent inhabitants, is situated about  $1\frac{1}{2}$  mile from the outlet of Upper Lake on its west shore.

Between the mouth of the Lardo and the Upper Lake, there are two places where the channel is split by islands, rocks and gravel bars.

The drop, or difference in level, from the crest of the riffle to comparatively still water below, is in both instances not less than two feet. The depth of water in the shoalest parts was found not to exceed 24 inches.

The approximate elevation of the Upper Lake above Kootenay Lake is assumed to be not more than 36 feet. Allowing the distance between the lakes to be 9 miles, the average water slope would be 4 feet per mile. As will be inferred, however, the slope is not uniform, the river being a series of shallow riffles, in some instances short and sharp, with comparatively deep pools of water between, flowing with moderate velocity.

It is at these riffles—met with either at the mouths of tributaries or where the channel is divided, that the greatest difficulties to navigation will have to be overcome.

Throughout the entire course of this portion of the river, which may be termed the Lower Duncan, erosion is constant wherever the current strikes the bank. The consequence is that trees are either constantly falling into the stream, or overhang the banks sometimes partially submerged. These latter are called sweepers, and especially in bends are dangerous to boatmen. There are also to be found in every reach of low velocity, a number of sunken or partially sunken snags, and on the upper ends of islands and bars accumulations of drift timber.

Duncan City is laid out on a gravel beach, the highest point being 195 feet above the lake, which appears to have been formed by the detritus deposited at the mouth of an old channel of the Lardo River, now flowing south-east about  $1\frac{1}{2}$  mile to the westward. This old channel, it is assumed, discharged into the Upper Lake through a narrow rocky gorge or cañon, now a pass, in a low spin or ridge of the mountains.

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By careful barometric readings, it was ascertained that the water level of the Lardo  $1\frac{1}{2}$  mile to the west of Duncan City, was about 60 feet above the lake. Allowing 6 feet as the fall from the lake to the confluence of the Duncan and Lardo, the latter falls  $63\frac{1}{2}$  feet in  $3\frac{1}{2}$  miles. This settles at once the question of the navigability of the Lardo.

At the upper end of Upper Kootenay Lake, about 8 miles long, the Upper Duncan River enters the lake. The mouth here is similar in character to that of the lower river. There are the same extensive sand bars through which the river enters the lake by three channels, the principal one, however, being in this instance on the east, instead of on the west side, along a rock bluff.

Continuing up the river on the east bank, 8 miles from the mouth, what is called Two-Mile Creek is reached.

The river over this portion passes with a sluggish current from side to side of the valley, three-quarters to a mile wide, sometimes skirting the foot of the mountains. The width varies from 200 to 400 feet. When the latter width exists, the current being further retarded, the depth is shallow, and numerous sand bars to some extent obstruct the channel. There are also present the usual snags, drift timber and overhanging trees or sweepers.

From Two-Mile Creek to Bear Creek the features remain the same, though the width is generally less, the current in places is greater, and there is a larger number of snags obstructing the channel. About two miles above the creek there is a big log jam over 150 feet long. Above this jam the river is comparatively clear for about a mile, when a rapid formed by a large number of snags and drift timber is encountered. This is evidently the remains of a large timber jam. Another such rapid has to be passed before Bear Creek, twelve miles from the mouth, the terminus of boating on the river, is reached.

It may be mentioned here that those who have prospected in the country, and freighted on the river, are of the opinion that above Bear Creek all freighting must be done by land trail or wagon road.

For reference the following recapitulation of distances is given :—

Kootenay Lake to mouth of Lardo River .....	7 miles.
Lardo River to Duncan City .....	3 “
Duncan City to Upper Kootenay Lake .....	$8\frac{1}{2}$ “
Upper Kootenay Lake to Bear Creek .....	12 “
Total .....	<hr/> 30 $\frac{1}{2}$ “

The alluvial land on either side of the river up to the foot of the mountains would, no doubt, prove valuable for farming purposes, if cleared, and provided overflow were prevented. The timber is of fair size and consists of cedar, fir, spruce, cottonwood and alder.

The Duncan River, fed mainly by glacier and snow field streams, is highly charged with sediment during freshets.

The waters of the Upper Duncan, however, find a settling basin in the Upper Lake, thus relieving the Lower Duncan of its contribution. The finer sediment of the latter is deposited at the outlet forming the bar already referred to.

The watershed, or catchment basin, of the Duncan is of limited area, and in consequence of the deep shore, and comparatively bare mountain slopes, the ice and snow within its narrow bounds disappear rapidly when the weather is warm. To this may be attributed the short duration, and intermittent character of the high water season, in those years when the freshet is not abnormal, and the weather variable. When, however, the freshet is unusual—such as prevailed in 1894—there is but a slight difference in level between the upper and lower lakes, the whole valley between being submerged during the highest of the flood.

Continual rain does not seem to have any effect on the river, for what is rain in the valley is snow during the same season on the mountains. The water in the lower lake fell fully twelve inches between the 7th and 19th September, 1895, notwithstanding it had been raining almost continuously since the 2nd of that month.



The obstructions to navigation in this river consist, first, of snags, drift timber, and overhanging trees or sweepers, almost throughout its entire course, except in the Upper Kootenay Lake, and secondly, of bars at the mouths of the river in the upper and lower lakes, and of bars, splits in the channel, and rock in the channel between the lakes.

The river as far up as Bear Creek, in round numbers 30 miles from Kootenay Lake, can be made safe and passable, at high water only, for moderately large and powerful stern wheel steamboats, by the removal of all the snags, drift wood and sweepers from the channel, at a moderate cost. But to attempt to train the river and deepen the bars at the mouth, to make navigation possible at low water stage, would entail an expenditure larger than the present developments would justify.

The work of clearing the Duncan River, from Kootenay Lake, of snags, overhanging trees and other obstructions to safe navigation, was resumed in the month of January, 1898, and continued until the month of April. The work was done in a most satisfactory manner and steamers were enabled to run in the spring through to the upper end of Howser Lake. It is now intended to improve the upper Duncan River.

The following are the details of the expenditure in connection with this service for the year ended 30th June, 1898 :—

Wages .....	\$2,531 50
Tug hire .....	20 00
Material ...	208 75
Boat hire.....	66 50
Contingencies.....	130 00
Total.....	<u>\$2,956 75</u>

FRASER RIVER.

The Fraser River is one of the largest besides being the most important of the many rivers of the Pacific province. It traverses, or rather penetrates, a country most diversified in its productions and undeveloped resources, both as regards the precious and other metals, as well as the products of the forest and soil. It has been well known since the early fifties, if not before, therefore there is no need, for the purposes of this report, to give a very extended description, except in the direction of those natural features which bear directly upon the works undertaken, or upon those contemplated, for the training of the channel with the view to prevent erosion and overflow ; and for the conservation, in a permanent and stable manner, of the ship channel from the city of New Westminster to deep sea water in the Gulf of Georgia.

The topographical characteristics of the Fraser throughout its entire course are in many respects similar to those of the Columbia River, lying to the south. Like it the Fraser takes its rise in small lakes at the western base of the Rocky Mountains, and, keeping close thereto for some distance, flows in a north-westerly direction before it bends to the west, and eventually turns south. The headwaters are at an elevation of about 3,000 feet above the sea, in the vicinity of the Yellow Head Pass, through which it was at first the intention to build the Canadian Pacific Railway ; lying a little to the south of the 53rd parallel of north latitude, between the 118th and 119th meridians of west longitude and but a short distance from Canoe River, which flows southward to join the Columbia at the Big Bend. The most northerly point of the stream is about 16 miles north of the 54th parallel on or about the 122nd meridian, whence its course is west for about 10 miles. Thence leaving the summit waters of the Peace River, which flow to the north, five miles or so to the right, the Fraser takes a general direction a little east of south as far as a place called Hope, situated on the left bank about 15 miles below Yale, which is the highest point of practical steamboat navigation and about 25 miles north of the 49th parallel, the international boundary line. From this point the stream gradually changes its direction, eventually taking a general course through the arable lands of the Fraser Valley, almost due west down to the Gulf of Georgia, into which it empties about eight miles north of the boundary and six miles

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west of the 123rd meridian. Allowing for the many bends and the frequent traverses of the valley, it is a close approximation to say that the length of the Fraser from its source to the gulf is not less than 900 miles.

Throughout this distance the river passes between and pierces many ranges of lofty mountains, on the sides and summits of which glaciers and snow fields abound, and among which, at the higher elevations, the snow measured as it fell, has been known to attain, in one winter, the great depth of 50 feet.

These mountains are also pierced by the lateral valleys of the many tributaries of the Fraser River, which range from the short lived mountain torrent to the large rivers whose sources are generally mountain lakes, the receptacles of the water from the melting glaciers and snow fields which surround them.

Commencing at the upper reaches and proceeding down stream, the principal tributaries entering the Fraser River from the right bank may be described briefly as follows :—

1. The North Fork, which penetrates by two branches, the western slope of the Rocky Mountains and enters at the point where the Fraser turns westward from the base of the mountains.

2. The Salmon River, which flows from the north-west, near by, and in a direction parallel, though opposite to that of the Peace River, and joins the parent stream where it bends to the southward.

3. The Nechaco River, whose numerous branches spread out fanlike northward to the 56th parallel, almost mingling with the headwaters of the Skeena, and westward and southward, and penetrate deeply into the heart of the Coast Range and which connects with the Fraser at Fort George.

4. The Blackwater River, which flows from the west also ; but is not so far reaching as the Nechaco, and joins the main stream, 50 miles south of the Nechaco.

5. The Chilcotin River, flowing from the same direction as the two former branches, which rises in a large lake, of the same name, lying at the eastern base of the Coast Range.

6. The Harrison River, which flows southward from a chain of large lakes and enters the Fraser about 45 miles below Yale.

7. The Pitt River which rises in a lake, situated a few miles north of the railway, fed by mountain streams, and flows in a south-westerly direction, joins the Fraser about eight miles above New Westminster.

8. The Coquitlam River, which has its origin in the lake of the same name, whence is drawn the water supply of New Westminster, flows south and joins the Fraser two miles below the mouth of the Pitt.

The chief tributaries entering from the left bank are :—

1. The Willow River, which rises in the heart of the notable placer gold mining country of Cariboo, and flows northward, joining the Fraser opposite the mouth of Salmon River already referred to.

2. The Quesnelle River, which also flows from the Cariboo country, but in a westerly direction, and empties into the Fraser at Quesnelle Mouth, some eighty miles south of Fort George.

3. The Thompson River, which joins the Fraser at the town of Lytton. This is a large river with many subsidiary streams, draining a large area extending east as far as the summit of the Gold Range ; south, almost as far as the summit lake of the Fraser, from which it is divided by a narrow neck in the midst of which the Canoe River flows to join the Columbia at the Big Bend ; and south about fifty miles. The Thompson is navigable from Savona's Ferry, lying at the west end of Kamloops Lake, about seventy miles above Lytton up to the town of Kamloops opposite the confluence of the North Thompson (which latter stream is also navigable for about 100 miles north) and thence continues eastward into Shuswap Lake and Salmon Arm, lying at the western base of the Gold Range. At a high stage of water, navigation may be continued south of the railway through Mara Lake up the Spillamacheen River to Enderby, a distance of twenty-three miles.



The Canadian Pacific Railway follows closely the Thompson waters from the summit lake in Eagle Pass to the confluence of the Thompson with the Fraser. In only one instance does it depart therefrom, and that is, where, to avoid a long detour, if the shores of Salmon Arm and Kamloops Lake were followed, a narrow neck of land separating them is crossed at an elevation of six hundred feet above the lake level.

Below Lytton to salt water, though many other streams enter from the left, none of them are of sufficient size or importance to require special mention here.

Viewing the river above Lytton, and keeping in mind its immense watershed and innumerable feeders, it is all but impossible to understand by what means such a body of water passes through the narrow cañon above Yale.

Thus the watershed of the Fraser River and its tributaries extends from the 49th northward to the 56th parallel of north latitude, and from the summit of the Coast Range on the west to the summit of the Rockies and the Gold Range on the east, embracing an area of not less than 70,000 square miles, equal to about one-third of the area of the mainland of British Columbia.

Between Yellow Head Pass and the mouth of Salmon River, the Fraser flows through a heavily timbered country. The banks are either of rock where the channel narrows, or in wider portions, of friable material, such as gravel, sand and clay. Navigation is said to be possible for steamers of light draught above Grand Rapids. Below Salmon River, the river widens out to about one thousand feet or more, having the appearance of a lake. The banks are low and heavily timbered with cottonwood. Below Fort George the river narrows again and flows with a steadily increased current through a country but sparsely timbered for some distance back from the banks of occasional elevated benches of good arable land where water can be turned on, divided at intervals by the inevitable cañon. Through the bench lands the banks are steep and always of material easily disintegrated by the erosive energy of the rapid current. These natural features continue through the Cottonwood Canon, referred to hereafter, past Quesnelle. Soda Creek, and the mouth of the Thompson to the point where the dry belt ends and the timber returns to the river bank again. The return of the timber gradually becomes evident below Lytton. Between Fort George and Soda Creek the river is navigable.

The white population above Yale is somewhat scattered and may be described as mainly agricultural and mining.

Though the cañon of the Fraser, through the Cascade Range, practically ends at Yale, the valley does not widen out appreciably for some distance below Hope. From this latter point to the mouth, the most densely populated part of the province, the river passes between low banks, frequently split up into sloughs or subsidiary channels, with here and there a rocky point or bluff jutting out, of most soluble alluvial soil, generally timbered with cottonwood along the banks, most fertile, but, with few exceptions, liable every year to overflow, the extent of which depends, in a great measure, upon the snowfall of the previous winter and the continuance of early and sudden extreme hot weather. At New Westminster the river is divided permanently by Lulu Island into two channels, called respectively the North Arm and the Main Ship Channel. This section of the valley is what is known as the Delta of the Fraser. It is very rich agricultural land, but subject to tidal overflow.

Four bridges only have been as yet thrown across the main channel of the Fraser. The first, a road bridge at Lillooet, 340 feet span, built of wood and iron; the second, a steel cantilever railway bridge, below Lytton, with a centre span of 300 feet, which carries the Canadian Pacific Railway from the left to the right bank, which it follows thereafter closely to New Westminster; the third, the Alexandria suspension bridge, of 256 feet span, whereby the old Cariboo wagon road crosses the Fraser two miles above Spuzzum, and the fourth, the Canadian Pacific Railway Company's bridge at the Mission, consisting of one span of 100 feet, eight spans of 150 feet each, and a swing truss of 239 feet over all; there are also 1,400 feet of trestle approaches on both sides of this bridge.

The lowest water occurs in the Fraser for a short period after the ice goes out, it then rises gradually by reason of the early spring rains; but it is not until the beginning of May, when the sun shines hotly, melting the mountain snow, that the settlers



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below Hope begin to anxiously watch the river. The first rise usually takes place in May, when the snow on the mountains along the lower reaches melts and seeks its natural outlet. This is generally followed by another and greater rise about June, or early in July, when the water of the melting snow and glaciers of the upper Fraser comes down. This is the time most dreaded, but strange to say in 1895-96, contrary to past experience, the unprecedented high water, which has proved so disastrous to the lower Fraser Valley, was caused by the waters of the Thompson. Fortunately the first rise receded before the great bulk of the Rocky Mountain water arrived. Had both come simultaneously it is impossible to say to what greater extent the destruction of lands and changes of river bed would have been carried.

Previous to the commencement of railway construction, the high water of 1876 was the highest known and was accepted as the extreme. In 1882, however, the river rose higher, and this was similarly accepted as the extreme limit. This confidence was rudely dispelled in 1895-96. In one direction at least, the occurrence of this freshet may be considered as not altogether an unfortunate one, not unmixed with good. Had all the dyking and reclamation schemes proposed, based upon the high water of 1882, been completed, the destruction and loss of property from Hope to the Gulf of Georgia would have been incalculable. The result will now be that all works undertaken, likely to be affected by another high water, will be designed to meet a flood of still greater height. It is not probable, but possible, that a combination of all conditions necessary to ensure the coming together of all the waters from the melting snows and glaciers over the whole area of the watershed of the Fraser, may happen. Such a contingency, though it may be considered by some remote, must be guarded against,

The erosion of the shores and bed of the channel, where it passes through or over easily disintegrated material, is constant, but of course is least during low water. As the river rises, the erosive energy of the current increases rapidly until the maximum is reached at the highest stage of water. The result of this constant and increasing eating away of the shores and bed, is that an immense amount of material is carried down stream in suspension; the quantity being augmented by every tributary large and small, until, in the lower reaches, the water is in such a turbid state, so charged with sediment, that it more closely resembles a thick pea soup than anything else it can be compared to. The extent of the sedimentation that must occur every year, at the mouth of the river or elsewhere, where the current is at all retarded, as for instance where the banks are overflowed, or where the inflowing tide meets the river current, may be easily imagined.

Another source of sediment is the hydraulic mining operations now being carried on, with every prospect of being extended, along the Fraser and all its branches. Should the expectations of those interested, even only in part, be realized, it will be necessary to take steps to supervise operations, and insist upon reservoirs being constructed at the points where such precautions are or may be considered necessary, for the purpose of impounding the material and preventing it being carried down stream in great quantities and deposited on any valuable land that may be overflowed, to its total destruction, or on bars in the river channel to the detriment of navigation. Such has happened in California, and it is stated by those familiar with both countries, that the available paying hydraulic properties on the Fraser River are much in excess of those in California.

Below the cañon at Yale, the bars and bed are chiefly coarse gravel and sand, the former becoming finer and finally disappearing below Miller's Landing. Thence outwards to the extreme limit of the Sand Heads in the Gulf of Georgia, the material composing the bars and the sides of the channel, for the most part, is a very fine, flaky silt, which when dry has a pearly or semi-metallic lustre. It is probably the result of the attrition of mica or talcose slate.

The destructive energy and capabilities of this surcharged freshet water are added to by the enormous quantities of drift timber borne along by the current. This drift comprises trees and timber of all sizes and descriptions, ranging from a cottonwood, cedar or fir, 150 to 200 feet long, with roots, from 15 to 20 feet in diameter, and branches intact, to the ordinary saw-log or tree top. It may be either green timber



recently fallen in, where the bank has been undermined, previously stranded timber or part of log-jams floated off by a higher water. The drift sometimes gathers in large rafts, and it is not difficult to realize the inherent destructive power of such a mass carried along by a current of great velocity, and the damage it will inflict when driven against a friable bank, dyke, bank protection, mattress work, wharf or bridge piers.

The river flow is affected by the inflowing tide, that is backed up to Chilliwack, about 48 miles above New Westminster, or 65 miles from its mouth. The diurnal fluctuation at Miller's Landing has been observed to vary between 12 and 30 inches in winter time.

At New Westminster, the range is for ordinary spring tides about five feet, but during freshet time, the water seldom falls more than a foot or eighteen inches.

There is no surface movement up stream except during low fresh water stages.

At the rock wharf, inside the mouth of the river, the greatest range of one tide is eleven feet, through the extreme range, that is the difference between the highest and lowest observed tide waters is eleven feet. The greatest tidal range recorded by the automatic tide gauge put up in the channel through the Sand Islands, two miles from shore, is fourteen feet; this occurred on 11th January, 1894, at full moon, though the difference of level between the lowest and highest tide waters known is only 14.7 feet.

For the purpose of ascertaining the surface slope of the river during the freshet at all stages of the tide between New Westminster and the tide gauge on the Sand Heads, a distance of  $18\frac{3}{4}$  miles, and between intermediate points, simultaneous tide gauge observations were taken on the 21st June, 1896, all the gauges being referred to one datum. The following table gives the condensed information thus obtained:—

River stretches.	Distance in Miles.	Difference of level at H. W. in feet.	Surface slope in feet per mile.	Difference of level at L. W. in feet.	Surface slope in feet per mile.
New Westminster to Ewen's Cannery..	5.8	2.08	0.39	3.70	0.65
Ewen's to Laidlaw's Cannery . . . . .	4.0	1.58	0.395	2.67	0.6675
Laidlaw's to Stone Wharf. . . . .	5.0	0.92	0.185	3.37	0.674
Stone Wharf to Tide Gauge. . . . .	3.9	0.75	0.192	3.71	0.95
Totals. . . . .	18.7	5.33	.....	13.45	.....

From the above it will be seen that the greatest surface slope between New Westminster and the gulf, therefore the swiftest current, is between the last mentioned points in above table, and it is in the vicinity of the wharf, both up and down stream, that the greatest cutting of the banks has taken place.

The motive for the foregoing, perhaps rather extended description of the physical characteristics of the Fraser Valley, is the desire to convey a clear impression of the magnitude of those elements or factors which enter so largely into the solution of all problems connected with the regulation of river channels, in the direction either of preventing erosion of the banks or of improving navigation.

A suggestion has been thrown out that perhaps the main river might be permanently relieved of some of the surplus flood water by diverting the sources of some of its many feeders into the head-waters of other rivers, to which in many instances they are in very close proximity. The practicability of such a scheme can only be determined by examination and correct levels. It may be added that such a proposition, however, appears to be, if anywhere, only possible with the branch streams above Lytton, and cannot seriously be considered with regard to the Thompson waters.

The work carried on during the year 1897-98 on the Fraser River consisted:—(a) In completing the hydrographic survey of the river and tributaries, commenced in 1896, between its mouth and Agassiz, with a view of preventing the further erosion of its banks, the shoaling of the navigable channel, and the flooding of the adjacent agricul-

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tural lands during flood season. (b) In removing snags from the channel, making soundings, and performing the usual buoy service at the mouth of the river for the Department of Marine and Fisheries, for which this department is paid the sum of \$915. (c) In building mattress protection work at Westham Island, in constructing a dam at Ewen's slough, and in making a cut at Miller's landing.

(a) The hydrographic survey between the mouth of the the Fraser River and Agassiz commenced in 1896, terminated in May 1898. The system of triangulation, and the field operations, are the same as described in the last annual report.

On the 11th of September, 1898, in the fire which consumed a large portion of the city of New-Westminster, including the offices of the department, the following records, in connection with this survey besides many valuable plans, were destroyed.

1. All field-books.
2. The copies of Trigonometrical work.
3. List of Bench Marks with values.
4. List of maximum and minimum water levels.

5. All gauge records from the gauges established at the following points:—Sand Heads, Garry Point, New Westminster, Haney, Sumas, Harrison, Lytton and Quesnelle.

The loss of these data makes it difficult for the present to adopt a method by which the overflow of the river, during the freshets, over the agricultural districts above New Westminster may be arrested. Enough data, however, remains on hand, to carry on the work of protection to the banks of Westham Island and Garry Point, in the most advisable manner, and the improvement of the channel at the mouth of the river. The chains of river triangulation performed on that survey, extend over a length of about 108 miles, the positions of 491 trigonometrical stations having been fixed. The aggregate length of main traverse lines (all of which were check-chained) is 64 miles. The total length of topographical stadia traverses is 640 miles, this figure being exclusive of surveys (frequently accompanied by lines of level) to place 91 miles of flood contours along banks, and the fixing of the many lines of soundings taken on Langley slough, Chilliwack River, Hope slough, Harrison River and the Fraser. The checking of bench marks along the Canadian Pacific Railway in connection with the survey involved levelling over 67 miles, all of which was gone over at least twice and much of it three times. In reducing lines of soundings establishing tide gauge zeros, determining water surface slopes, taking cross-sections of river to above maximum flood level and connecting these sections with bench marks, 43 miles of levels were run; all having been gone over at least twice. The soundings taken on the Fraser aggregate  $4\frac{1}{4}$  miles, on the Harrison River a total length of 12 miles was taken; on Hope slough, Chilliwack River and Langley slough the total length of soundings taken reached 15 miles. The measuring of verification bases together with stellar and solar observations to check angular work took up a good deal of time. The main triangulation was carried on the Fraser River proper, the Harrison River, the Pitt River, the north arm of the Fraser River and the south branch of the north arm.

Main traverses emanating from and terminating on trigonometrical stations were made on Parson's channel, 3.6 miles; Langley slough, 4.3 miles; Sea Island, 3.1 miles; Boyd's slough, 3.0 miles; Hope and gravel slough, 6.5 miles; Hope slough, 9.0 miles; Nicomen slough, 14.7 miles; Zait a Cullachan slough, 2.1 miles; to Garry Point, 3.8 miles.

The calculated maximum discharge of the Fraser River in the 1894 flood was found to be about 490,000 cub. feet a second at New Westminster; the minimum discharge for the same section being found to be about 130,000 cub. feet a second.

A tide table has been computed showing the time and height of high and low water at Garry Point and New Westminster, and extracts from this table are published daily in the local newspapers for the information of pilots and fishermen, an innovation which has proved of great service.

The total expenditure incurred during the year ended 30th June, 1898, in connection with the tidal observations and surveying operations above described, amounts to \$19,993.16.



(b) The removal of snags and keeping the channel marked out properly by buoys was, as usual, done by the snag boat "Samson," between Sumas and the mouth of the river, a distance of about 60 miles. When not engaged on this work the boat was used for sounding and surveying the channel between New Westminster and the mouth, also for the installation and inspection of tide gauges, until March 9th, 1898, when the boat was laid up at New Westminster for repairs.

The following is a table giving the number of hours the "Samson" was employed on each service from the 1st of July, 1897, to 8th of March, 1898, exclusive of Sundays and holidays, 213 working days or 2,130 hours:—

Number of snags removed.....	184
Hours snagging.....	222
do Buoy service.....	275
do Repairing and painting.....	146
do Sounding and surveying.....	348
do Pile driving.....	50
do Visiting, repairing and building tide gauges.....	174
do Building approach to draw, Pitt River Bridge.....	285
do Repairing booms at Observatory, winter quarters, Rock wharf, etc., to protect against ice.....	129
do Raising "Fairy Queen".....	15
do Preparing for dredging at Sumas.....	20
do Moving Fraser River survey scows.....	15
do Inspecting buoys (not charged).....	50
do Sundries including shipping supplies, watering, washing, out, etc., filling boiler, travelling, etc.....	401
Total.....	2,130
Hours, steam up.....	1,242 $\frac{1}{6}$
Coal used (washed nut).....	169,600 lbs.
Wood used.....	87 $\frac{1}{8}$ cords.

In the above statement 285 hours appear in connection with work done at Pitt River bridge on the line of the Canadian Pacific Railway company. The "Samson" was employed for driving piles to guide vessels through the draw span pass; the company furnishing all the materials required and doing all the work which could not be performed by the "Samson" and her crew.

In March, 1898, when the "Samson" was ordered for the Stikine River service, it was decided to build a new snagging scow to take its place on the Fraser River. The dimensions of this scow are 80 feet by 24 feet over all, and 5 feet 1 inch deep, from top of deck to bottom of scow. The house on top comprises living compartment for the men, 24 feet by 18, and an engine room 23 feet by 12 feet affording ample accommodation for storing supplies. The hoisting machinery is a double cylinder hoisting engine arranged with two friction drums, foot brake, boiler and fixtures complete, two cylinders 6 $\frac{1}{2}$  inch by 8 inch stroke, boiler 34 inch diameter. The boiler and engine are mounted on the same base. The equipment comprises ropes, blocks, tools, cooking utensils, etc.

The details of the cost of this snagging scow are as follows:—

Scow, house included.....	\$ 1,903 00
Engine.....	875 00
Equipment.....	705 64
Total.....	\$ 3,483 64

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The details of the running expenses of the snag-boat "Samson," snagging scow, and tug "Princess" on the Fraser River for the past year are as follows :—

Wages.....	\$ 5,225 77
Material.....	575 30
Provisions.....	1,087 49
Wood.....	250 25
Coal.....	372 75
Water.....	30 00
Contingencies.....	40 38
	\$ 7,581 94

The log of the "snagging scow," from the time she was put in commission to the 1st of July, 1898, having been destroyed in the fire, it is impossible to give a detailed statement of work done during that period. The operations were much the same as those of the "Samson."

(c.) After a careful study it was found that the most urgent work required in connection with the Fraser River improvement was the protection of the river bank on Westham Island, at the mouth of the river.

Along a portion of the island the washing away of the bank has been so rapid that, in the past five years, a strip of land, averaging 500 feet in breadth, has been carried away. This very serious erosion was caused by the main body of the river, after coming through Woodward's slough, striking against this section of Westham Island. The soil of this island being composed of silt, no resistance was offered to the current with the result above described. In order to arrest any further encroachment by the river a continuous mattress protection was built along the shore a distance of 3,600 feet. These mattresses are 100 feet x 25 feet x  $2\frac{1}{2}$  feet, made of alternate cross layers of brush laid on timbers, which are bolted to a second set of timbers laid on top of the mattresses. Four of these mattresses are fastened together with strong timbers and bolts, into a section 100 feet square. These large sections are then placed so that one end of each rests on the edge of the bank and the other end floats in the stream, they are then loaded with rock and sunk in that position. All gaps due to the irregularities of the river bank are filled in with fascines and rock. In cases where the size of the gaps will permit, smaller mattresses are built to fit in behind the larger ones and sunk in the same manner.

The total area of bank protected was 376,676 square feet, making a total of 941,690 cubic feet of mattresses and fascines. One hundred and forty seven mattresses were used in connection with this work at a cost of \$33,073.41. In this amount \$700 is included for the fascines used in filling spaces behind the mattresses.

The cost per mattress sunk in place was .....	\$227 03
"        square foot        "        .....	0.0878
"        cubic foot        "        .....	0.0351

Within the past few years a channel has been cutting through the sand bar opposite Ewen's slough. This has had the effect of silting up the channel passing by Steveston and thereby preventing access by steamers to the canneries lying at the upper end of Steveston. In order to restore the channel to its former condition a dam was built which will have the tendency to close this newly made channel and throw the water into the old channel by the canneries at Steveston.

The following mattresses were used in building this dam at a cost of \$2,493.75 :

1 mattress	100 ft. x 24 ft. x $2\frac{1}{2}$ ft.
1        "	100 ft. x 24 ft. x 5 ft.
4        "	100 ft. x 24 ft. x 6 ft.

At Miller's landing, Sumas, the Fraser River has been encroaching also in a serious manner.



From 1876 to 1897, 123 acres of valuable improved land (mostly planted with fruit trees) have been washed away. From 1890 to 1897, 28 acres have been carried off in the same manner. Previous to 1894, attempts had been made to arrest this bank erosion by building a wing dam.

During the past year a cut 80 feet wide was excavated through the bar opposite Miller's landing. This was done with the object of restoring, as nearly as possible, the main channel of the Fraser River to its former position, that occupied by it previous to 1876. Operations had to be suspended in the month of May, before the work was completed, owing to the sudden rise of the river. I would strongly recommend that work be resumed at this point during the present year with the aid of a powerful dredge. The cost of this work for the past year is \$7,581.94.

The total expenditure during the year ended June 30th, in connection with these improvements is \$49,997.57, of which the details are :

(1) Mattress protection at mouth of river on Westham Island and dam across channel opposite Ewen's slough :

Wages.....	\$15,199 21
Plant.....	691 33
Coal.....	1,673 00
Plant, scows, etc., and material used.....	11,400 45
Material on hand.....	3,757 17
Provisions.....	5,200 49
Tug hire.....	4,206 86
Superintendence.....	324 55
Contingencies.....	223 80
	<hr/>
	\$42,576 86

(2) Miller's landing :

Wages.....	\$ 5,698 78
Material.....	1,138 13
Wood.....	10 00
Tug hire.....	408 00
Coal.....	7 20
Provisions.....	124 70
Contingencies.....	33 90
	<hr/>
	\$ 7,420 71
	<hr/>
	42,576 86

Total..... \$49,997 57

NICOMEKLE RIVER.

The Nicomekle River is situate in the southern part of the district of New Westminster, and empties into Boundary Bay.

During the year ended June 30th, 1898, the sum of \$184.25 was expended in removing snags from the channel of the river.

OKANAGON RIVER.

The portion of the Okanagon River now under reference is that which connects Okanagon Lake with Dog Lake, being to the south of the former. On the former lake, which is upwards of 60 miles long, a large stern-wheel steamer belonging to the Canadian Pacific railway, plies, connecting at Vernon, situate at the upper end of the lake, with the Shuswap and Okanagon branch of that line. At Penticton, situate at the lower end of Okanagon Lake, it is proposed to connect with a small steamer plying by way of the Okanagon River and Dog Lake to Okanagon Falls, in the vicinity of which rich mineral deposits are said to exist.

## Department of Public Works.

The distance between the lakes, by way of the river is about five and a half miles, while in a straight line it is about only three miles. The upper portion of the river is very narrow, gradually widening out and becoming shallower, for about half its length, when it widens and deepens to Dog Lake. It is not possible to make the river navigable for steamers of from 139 to 150 feet long, except at considerable outlay. During the year ended June 30th, 1898, the work of improving this river consisted in removing snags and log jams which, in some cases, obstructed the river completely from one bank to the other. After this work was completed in the month of October, the steamer specially built to run from Penticton to Okanagan Falls made three successful trips through the Okanagan River, but was then laid up on account of the traffic not proving remunerative.

The details of expenditure in connection with this river for the year 1897-98 are as follows :—

Wages .....	\$430 35
Material .....	69 65
	<hr/>
Total .....	\$500 00

### SKEENA RIVER.

The Skeena River lies in the north-western portion of British Columbia. It derives its source from lakes and glaciers situate between the 56th and 57th parallels of north latitude and between the 126th and 128th degrees of west longitude. It flows generally in a south-westerly direction and empties into the waters of the Pacific Ocean by way of North Skeena, Telegraph, and Malaca passages, Chatham Sound, &c., at a point a little north of the 54th parallel of north latitude, and a few miles west of the 130th degree of west longitude, and about 650 miles, by the inner passage, north-west of Victoria. The principal post office and port on the Skeena is Port Essington, lying on the south shore of the estuary, at the confluence of the Skeena and Oxtall rivers, 13 miles east or inland of the entrance passages. It is navigable by light draught steamers, when the water is not too high, from May to the end of September, as far up as Hazelton, a Hudson's Bay company post, established on the south bank at a distance of about 173 miles from the mouth of the river. This post is the distributing point for the mining and grazing country lying to the north and west towards the Rocky Mountains and Peace River country, and to some distance to the south.

The appropriation of \$3 500 made for the improvement of the Skeena was expended (as shown by the details below) as follows :—

1st. In constructing a snagging scow to replace the old one which had reached a state of decay such as to make it unfit and unsafe for the work. This scow was built of the following dimensions :—Length 60 feet, width 20 feet 6 inches, depth 4 feet 6 inches, and fitted with an A frame on the bow for hoisting out snags, and a house 18 feet by 14 feet, for the accommodation of the men. The hoisting appliances and gear were moved from the old to the new scow. The latter was built by contract and cost \$1,077.50.

2nd. In improving the condition of the salmon fishing grounds in the tidal water of the estuary which extends inland from the mouth about 25 miles, by removing from the bars and channels, sunken snags and drift wood which, replenished yearly by the freshets, prove destructive to the Salmon drift nets.

The details of this expenditure for the year ended June 30th, 1898 are :

New scow .....	\$1,077 50	
Snagging operations :—		
Wages .....	\$642 50	
Boat .....	50 00	
Tug hire .....	915 00	
Materials and tools .....	452 50	
Contingencies .....	63 50	\$2,123 50
	<hr/>	
Total .....		\$3,201 00



Of the amount of \$452.50 for materials \$380.60 was expended in the purchase of 500 lbs of dynamite, and tools, to be used in the removal of rocks in the canyon which are a danger to navigation. However, the construction of a new scow, and the removal of snags, having consumed nearly the whole of the appropriation, the work of improving navigation in the upper reaches of the river, above tide water, was not resumed.

The Skeena river is at present the natural highway by which freight and passengers can be most conveniently transported into the rich mining country forming the northern and north-eastern portion of the province, and to the Peace River country, and for this reason expenditure with the object of securing safe navigation is justifiable. At present all the supplies for the Hudson Bay Co's stores through that district are taken up the Skeena River by steamer to Hazelton, and from there by pack train to the Omenica and Peace River districts.

#### STIKINE RIVER.

##### *(Route to Yukon.)*

On the 10th March, 1898, orders were issued by the department for an examination of a water route from the Pacific coast to the Yukon district all through Canadian territory, via the Stikine River, Teslin Lake and the Hootalinqua, Lewis and Yukon Rivers. With a view of rendering this route immediately available, as far as practicable, for the transportation of miners and settlers, desirous of reaching the newly discovered Klondyke gold fields with their outfits and provisions, authority was also given to carry on such preliminary work as might be found urgently needed to improve navigation over the most obstructed and dangerous rapids and reaches of the chain of rivers and lakes just named, either by snagging, removing rocks, etc., or otherwise. At the close of the year ended 30th June, 1898, this examination was in progress, and the work of snagging etc., as will be described below, had been commenced on the Stikine River.

The Stikine River has its source in the southern part of Cassiar district, and runs a distance of nearly 130 miles up to the 58th parallel, where it suddenly makes a sharp bend then turns almost due south to within 20 miles of its mouth, a distance of 150 miles. From that point it runs in a westerly direction and empties into the Stikine Strait (Pacific Ocean) between the islands of Wrangel and Mitkof. The total length of the river is approximately 300 miles. The mouth of the Stikine proper is situated 10 miles from the port of Wrangel, between Point Rothsay and Farm Island, where it has a width of  $2\frac{1}{2}$  miles. It is subjected to high tides varying from 18 to 26 feet (neaps 18 feet, springs 26 ft.) which affect the river, as far up as the Ka-te-té River, a small tributary which empties into the Stikine, 25 miles from its mouth.

At lowest water, the estuary of the river is for about two hours, and for a distance of about 5 miles from the sea, a sand flat through which the stream winds its course, being about 20 inches deep; but owing to the great range of the tides this part of the river is easily navigable, and as soon as the flood has risen four or five feet, there is abundance of water for any river boat. The width of the river for the first 25 miles varies from  $2\frac{1}{2}$  miles to 500 feet, although in some places islands divide it into several channels, the largest of which is about 200 feet in width. As to the navigability and main characteristics of the upper reaches of this river and other rivers composing the Stikine route to the Yukon, the examination in this connection, at the close of the year, was not advanced far enough to permit of giving any reliable and definite information. In the lower reach of the Stikine River the main obstructions to navigation were found to consist of snags and large trees overhanging the banks of the river, and in March, 1898, the snag boat "Samson," doing service on the Fraser River, was commissioned for work on this river. This snag boat had first to be laid up for necessary repairs and alterations at New-Westminster. These repairs and alterations consisted of renewing a number of planks and keelsons, which proved to be decayed, and putting in eleven water-tight compartments which had the effect of strengthening her considerably. The boiler and steam pipes were also newly covered and the boat was completely repainted. Many

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minor repairs to her machinery, etc., were also made, and the boat was equipped with new ropes, four new row boats, a set of new snagging chains, a new outfit of tools, and two large Benton head-lights ; provisions and supplies were procured for a seven months cruise.

The "Samson" arrived at Wrangel only at the end of April, having been delayed by gales at different places. The boat proceeded up the river as far as the 75th mile, but there, the river proving too rapid to allow the boat to go farther, instructions were given to commence the removal of snags and other obstructions at that point, and work down stream as far as the 50th mile, comprising the worst portion of the river for snags between Glenora and the mouth. A party of eight men was also organized to remove snags and other obstructions from the channel between the 80th mile and a point about 10 miles below Glenora. This work consisted chiefly of blasting snags with dynamite, and cutting down overhanging trees and sweepers from the banks. The "Samson" and the exploring party were still engaged on their work at the close of the year. It is impossible to describe in detail the work done, either by the snag-boat "Samson" or the above mentioned party, or to give statements thereof, the weekly reports having been destroyed in the New-Westminster fire.

The total expenditure in this connection up to the 30th June, 1898, amounts to about \$14,000.00.

### WILLIAM'S HEAD QUARANTINE STATION.

The British Columbia Quarantine station at William's Head is situated about eight miles south east of the city of Victoria, and covers an area of about 60 acres. In the spring of 1892, a deep water pile wharf was built in connection with this quarantine station, the Government supplying the Muntz metal required for covering the piles, to prevent them from being destroyed by sea worms. The wharf is situated at Parry Bay, which opens towards the north and Victoria on the west side of William's Head. It is 480 feet long by 40 feet wide, and has an approach 320 feet on the south side leading to the hospital residence and first class passenger shelter houses, and another on the north side leading to the disinfecting apparatus and to the Chinese and Japanese shelter houses.

During the fiscal year ended 30th June, 1898, the work done in connection with this service may be enumerated as follows :

1. New wharf built for steamer "Earle" ;
2. Repairs to old wharf ;
3. Improvements to water service ;

1. A wharf 118 feet 6 inches by 40 feet and an approach thereto measuring 36 feet by 12 feet, were built for the accommodation of the steamer "Earle", which previously was unable to tie up when the main wharf was occupied by a steamer in quarantine. This new wharf is to be used for storing the steamer Earle's coal, and other supplies belonging to the station.

2. The repairs to the wharf consisted chiefly in removing piles that were eaten by teredos. This work was very difficult to carry on, the flooring having to be ripped up in sections and a special pile driver built on the wharf. In the amount for material \$1,339.68, is included the purchase price of 300 feet of boom-sticks to make a fender in front of the wharf to prevent vessels from tearing their projecting gear against the fender piles on the edge of the wharf.

3. The work in connection with the water service consisted in lowering the water in the lake supplying the Quarantine station, sufficiently to remove the decayed vegetable matter which had been accumulating therein for years. The grass and weeds covering the ground likely to be flooded during the freshets was burnt and all trees in danger of falling into the lake were cut down. A number of sunken logs was also removed. A marked improvement in the water supply was noticed when this work was completed. A New York filter with a capacity of 43,250 gallons per 24 hours was purchased and fitted on the grounds near the superintendent's residence.



The expenditure during the past year may be detailed as follows :—  
New wharf for str. “ Earle ”

Wages.....	\$ 514 00	
Materials .....	1,286 00	
		\$1,800 00
Repairs to wharf—		
Wages .....	\$ 1,723 60	
Tug hire .....	43 00	
Materials .....	1,339 68	
Contingencies.....	63 00	
		\$3,169 28
Water Service—		
Wages.....	\$ 437 75	
Material.....	158 73	
Team hire.....	25 50	
Tug hire.....	8 00	
Filter .....	400 00	
		\$1,029 98
Total .....		\$5,999 26

DREDGING OPERATIONS.

During the fiscal year ended 30th June, 1898, dredging operations were carried on in the undermentioned localities, chiefly by the government dredging fleet ; but in some instances with hired dredging plant. The limited number of dredge vessels owned by the Public Works Department, is far from being sufficient to carry on satisfactorily the extensive operations which the Federal Government is, from year to year, called upon to undertake owing to the steady increase in the tonnage and draught of vessels generally and the pressing need of deepening harbours on the sea coasts, so that they may be easy of access and afford fairly good accommodation for shipping, landing and sheltering purposes to both steam and sailing vessels at all stages of the tide ; improving existing highways of navigation ; opening new routes and harbours on inland waters, etc.

PROVINCE OF NOVA SCOTIA.

- Arisaig—North-west coast, Nova Scotia.
- Barrington Passage and Sherrow’s Channel—South-east coast, Nova Scotia.
- Larry’s River—South-east coast, Nova Scotia.
- Lockport—do do
- Osborne—do do
- Port Mouton harbour do do
- Wallace harbour—Northumberland Strait.
- Yarmouth harbour—South-west coast, Nova Scotia.

PROVINCE OF PRINCE EDWARD ISLAND.

- Charlottetown Ferry Slip—Northumberland Strait—Queen’s County.
- do Steam Navigation company’s wharf—Northumberland Strait, Queen’s County.
- Southport Ferry—do do do
- Summerside, Bedeque Bay—do do Prince County.
- do Holman’s wharf, Bedeque Bay—do do

PROVINCE OF NEW BRUNSWICK.

- Cushing’s Mills—River St. John.
- Fredericton—do York County.
- Gagetown Creek Canal—River St. John, Queen’s County.
- Jemseg River—An affluent of the St. John, do
- MacLean’s wharf, Burton—Sunbury County.
- Richibucto harbour, mouth of River, Northumberland Strait—Kent Co.
- Intercolonial Railway terminus—St John Harbour.
- McAvity’s wharf—do do
- Lawton’s wharf—do do
- Thorne’s wharf—do do
- Maritime Nail Co’s wharf—do do

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### PROVINCE OF QUEBEC.

Ship channel between Montreal and Quebec—(River St Lawrence).  
Charlemagne—River L'Assomption.  
Chateauguay—Chateauguay River, affluent River St. Lawrence, south shore.  
Coteau Landing—River St. Lawrence, north side.  
Isle Gros Bois—River St. Lawrence, below Montreal.  
Laprairie—do south shore.  
Longueuil—do do  
River Richelieu—Affluent River St. Lawrence, south side.  
River St. Francis—do do do  
Pointe aux Trembles (en haut) River St. Lawrence. do  
St. Jean Deschaillons—do do  
St. Michel—do south shore, below Quebec.

### PROVINCE OF ONTARIO.

Adolphustown—Bay of Quinté.  
Amherstburg—Detroit River.  
Bowmanville—(Port Darlington), Lake Ontario.  
Belleville—Bay of Quinté, mouth of river Moira.  
Cobourg—Lake Ontario, north shore.  
Frenchman's Bay—(Pickering Harbour), Lake Ontario.  
Kaministiquia River—mouth of river, Thunder Bay, Lake Superior.  
Kingston—Lake Ontario.  
Meaford—Georgian Bay, Lake Huron, (south side).  
Midland—do do  
Newcastle—Lake Ontario, north shore.  
Point Edward—St. Clair River.  
Port Arthur—Thunder Bay, Lake Superior, north shore.  
Port Elgin—Lake Huron, East shore.  
Port Stanley—mouth of Kettle Creek, Lake Erie, north shore.  
Prescott—Upper St. Lawrence, north side.  
Saugeen River—Lake Huron, near Southampton.  
South nation River—A tributary of the Ottawa, south shore.  
Sydenham River—Lake St. Claire.  
Texas Landing—Detroit River.  
Whitby—Lake Ontario, north shore.

### PROVINCE OF MANITOBA.

Red River—mouth of River, Lake Winnipeg.

### PROVINCE OF BRITISH COLUMBIA.

Nanaimo Harbour—Vancouver Island.  
Vancouver Harbour—Burrard Inlet, New Westminster District.

## PROVINCE OF NOVA SCOTIA.

### DREDGING AT ARISAIG.

Arisaig, Antigonish county, is a village on the gulf of St. Lawrence,  $3\frac{1}{2}$  miles north-east of New Glasgow, with about 150 inhabitants, one store and a post office.

A small steamer calls here when weather permits.

Spring tides rise  $5\frac{1}{4}$  feet, neaps  $3\frac{1}{4}$  feet.

Although the small cove at Arisaig cannot properly be called a harbour, and is dangerous, especially with winds north to west, noteworthy effort has been made to improve this place by dredging. Part of an old breakwater, some iron ore that was left from a sunken vessel in the approach to the harbour and sand rock were removed; the dredged cut being carried in towards shore eight feet deep, 150 feet wide along the inside of the breakwater, to a point where but four feet could be obtained on account of ledge rock.



Between the 8th and 30th June, 1898, the dredge "George McKenzie" removed a further quantity of 2,205 cubic yards of material to eight feet at low water spring tides. This was exceptionally hard and trying work performed in a dangerous place.

#### DREDGING AT BARRINGTON PASSAGE AND SHERROW'S CHANNEL.

Barrington Passage is a seaport town of Shelburne county, N.S., about 165 miles south-west of Halifax, with a population of about 500 engaged in fishing and farming.

A steamer running between Yarmouth and Halifax calls at the public wharf to land passengers and freight. There are several churches, hotels, stores, and a custom house in the place, which is one of the shore line railway termini.

Spring tides rise  $8\frac{1}{2}$  feet and neaps  $6\frac{1}{2}$  feet.

Sherrow's channel, running into the passage east of Robertson's wharf and the bar, engaged the attention of the department in regard to improvement by dredging.

During the fiscal year the dredge "Canada" operated from 10th May to 30th June, deepening and improving the channel towards the public wharf from the passage, to 10 feet depth which it obtains at the wharf, 12,780 cubic yards, principally mud, being removed to a distance of about three miles.

#### DREDGING AT LARRY'S RIVER.

Larry's River, Guysboro county, is a post settlement at the west end of Tor bay, with a population of about 400 principally engaged in fishing. There is a telegraph station. Tides rise  $5\frac{1}{2}$  feet at neaps and seven feet at springs.

The work of continuing the improvement of the channel of Larry's River to 8 feet depth at L.W.S.T. was carried on by the dredge "Geo. McKenzie" from 1st July to 22nd September, 1897, and a new channel eight feet deep was made to the wharf.

15,390 cubic yards of mud, boulders, etc., was dredged, and the materials were hauled to a place of deposit about one mile distant.

#### DREDGING AT LOCKEPORT.

The town of Lockeport is a port of entry on Ragged Island harbour, Shelburne county, about 37 miles E.S.E. of Shelburne. The population of the settlement is about 1,500, and there is a considerable trade done here in West Indian goods and in products of the fisheries. There are several stores, a hotel, a branch bank, a telegraph office, etc. The approach to the harbour is difficult, but within the anchorage is good. The rise and fall of tide is  $7\frac{1}{2}$  feet at springs and five feet at neaps.

Dredging was done in the harbour, improving the channel and in front of the wharfs, to ten feet L.W.S.T. The material removed was principally mud which was deposited at a distance of three to  $3\frac{1}{2}$  miles from the seat of operations.

During the fiscal year the dredge "Canada" removed 28,170 cubic yards of material.

#### DREDGING AT OSBORNE.

Osborne wharf, Shelburne county, in the vicinity of Lockeport in the same harbour, about one mile distant to the north, had the services of the dredge "Canada" for about four days in October deepening towards the wharf, so as to give ten feet water L.W.S.T.; the material dredged was 990 cubic yards of mud which was removed to a distance of about three miles.

Tides here have about the same range as at Lockeport, springs seven feet, neaps 5 feet.

Within about 20 feet of the wharf rock was struck so that the extension of the wharf some feet farther out will secure the full benefit of the dredging done.

## Department of Public Works.

### DREDGING AT PORT MOUTON.

Port Mouton is a small village in Queen's county, of about 400 inhabitants, situated about 10 miles west of Liverpool in a bay of the same name. The settlers are principally fishermen.

Tides rise, springs  $7\frac{1}{2}$  feet, neaps  $5\frac{3}{4}$ .

The dredging done during the fiscal year, was the straightening and deepening of the channel at the entrance to the harbour and approach to wharfs to a depth of 9 feet L.W.S.T. From the 1st July to the 10th August, 1897, the "Canada" removed 9,270 cubic yards fine sand and deposited it at a distance of about one mile.

### DREDGING AT WALLAGE.

Wallace, Cumberland county, is a seaport on Northumberland strait and, excepting Pictou, is the finest harbour on this coast. There are 16 feet water over the bar at low water. Spring tides rise eight feet enabling vessels of large draft to enter; neaps rise five feet. Wallace is a pretty place with a population of about 400 and contains several mills, a tannery, etc. There are extensive quarries of freestone, gypsum etc. in the vicinity. The harbour is about  $\frac{1}{2}$  mile wide but the channel between the flats is but 60 or 70 yards wide.

The improvement of the channel, the ferry approaches, N. and S. sides and at wharfs by dredging received the attention of the Department during the fiscal year, viz:—in October, November, April, May and June of the year, when a further quantity of 22,455 cubic yards of clay, mud etc. was removed by the dredge "Geo. McKenzie" a depth of seven feet at L.W.S.T. being made; some parts of the work were, however, dredged to eight and twelve feet depth. The place of deposit was about  $1\frac{1}{4}$  mile distant.

### DREDGING AT YARMOUTH.

The seaport town of Yarmouth, Yarmouth county, is of considerable extent, being over two miles in length. The population is 6,000, and the town does a large trade in products of the fisheries and in manufactured articles. Yarmouth is the terminus of the Dominion Atlantic railway and of a line of steamers to Boston, owned by the Yarmouth Steamship company, &c.

Spring tides rise at Yarmouth 16 feet, neaps 13 feet.

The channel leading to the wharfs is narrow and circuitous but well marked with buoys. The anchorage within Bunker Island is safe from all winds. The channel has repeatedly been dredged, since 1875.

The work of further deepening the channel to 17 feet at L.W.S.T., and widening and straightening, on which the "St. Lawrence" was engaged at the close of 1896-97, was continued up to 28th July, 1897, when the dredge was sent to Richibucto, N.B. The St. Lawrence returned to Yarmouth 20th November, 1897, and resumed operations, prosecuting the work vigorously until laid up for the season on the 1st January, 1898.

On the 18th April, 1898, work was again put under way and pushed ahead quite satisfactorily up to the close of the fiscal year.

The dredging contemplated here comprises the widening of the channel from the wharfs to as far on the opposite bank as the dredge "St. Lawrence" can work, and to a depth of 17 feet L.W.S.T, opposite the Dominion Atlantic Railway wharf making the channel 16 feet deep at L.W.S.T.

A large amount of necessary work has been done in the past at Yarmouth, greatly improving and facilitating navigation. The total dredged area covered a length of about 1,400 yards and with a varying width of 20 to 115 yards; some of which has been dredged twice. The dredging is frequently attended with difficulties and interruptions owing to narrow channel, which prevents her working up to full capacity; the prevalence of vessels getting in the way and the necessity of turning the dredge at low tide in the narrow channel which prevents her working up to full capacity; the prevalence of



foggy weather ; the great length of the run of 6 miles to the dumping ground, etc. During the fiscal year 1897-98, 55,825 cubic yards were excavated, principally mud, sand, ashes, some rocks and pieces of old wrecks.

#### DREDGING AT FERRY SLIP—CHARLOTTETOWN.

This is an important ferriage slip in the harbour of Charlottetown, the capital of Prince Edward Island. Considerable traffic is carried on between the city and Southport, across the harbour.

During the year the dredge "Prince Edward" was engaged to 9th July deepening and improving the approach and slip to 10 feet depth at L.W.S.T. A quantity of 261 cubic yards of material, principally mud, was removed and deposited at a distance of from one to  $1\frac{1}{4}$  miles.

#### DREDGING AT THE STEAM NAV. CO'S WHARF, CHARLOTTETOWN.

This wharf, also an important point in Charlottetown harbour, required the services of the dredge "Prince Edward" from the 10th to the 27th July, 1897, deepening to 13 feet when a total quantity of 5,445 cubic yards of mud was removed to a place of deposit  $1\frac{1}{4}$  miles distant. The expense of performing this work was borne by the Steam Navigation company.

#### DREDGING AT SOUTHPORT FERRY, CHARLOTTETOWN HARBOUR.

Southport lies across the Hillsboro River from the City of Charlottetown and is the terminus of a ferry over which there is large traffic. The dredge "Prince Edward" was at work from 28th July to 28th August, 1897, deepening and improving so as to give 13 feet water at L.W.S.T., which necessitated the removal of 12,285 cubic yards of mud etc., to a place of deposit  $1\frac{1}{4}$  miles distant.

#### DREDGING AT SUMMERSIDE, HOLMAN'S WHARF.

Between 25th September and 11th October, 1897, and 28th May to 28th June, 1898, the dredge "Prince Edward" improved the depth of water along both sides and the outer end of Holman's wharf in Summerside harbour, so as to give 14 feet water at L.W.S.T. ; removing 9,585 yards of mud, sand and rock and depositing these materials at a place one mile distant.

Ocean and Montreal steamers now berth at this wharf. Spring tides rise seven feet ; neaps five feet.

#### DREDGING AT SUMMERSIDE HARBOUR.

Summerside, the capital of Prince county, and the second largest town of the Province of Prince Edward Island as regards population, has an excellent harbour and owing to its advantageous position on Northumberland Strait is a seaport of considerable and increasing importance. There is land locked anchorage for the largest vessels ; the population numbers about 3,000, and a large export trade in produce, horses, cattle sheep, oysters etc., is carried on. Several wharfs extend from the town into Bedeque Bay harbour, the principal of which are : the terminus of the P. E. I. Railway and steamboat lines, the Queen's and R. T. Holman's wharfs.

During this fiscal year ended 30th June, 1898, the "Prince Edward" continued the improvement of the harbour from the main channel to the Queen's and Holman wharfs increasing the depth to 14 feet at L.W.S.T. The dredge was engaged on this work from 1st to 25th September and 12th October to 25th November, 1897, and 3rd to 28th May and 28th June, 1898. 16,785 cubic yards of mud, sand and clay including several rocks were removed, the materials being deposited at a distance of about one mile. Spring tides here rise seven feet ; neaps five feet.

# Department of Public Works.

## PROVINCE OF NEW BRUNSWICK.

### DREDGING AT CUSHING'S MILLS.

Cushing's Mills are on the east side of the River St. John near the city of the same name.

In compliance with a request made the department by Messrs. Cushing, the owners of the mills, the dredge "New Dominion" operated 2nd to 8th April and 11th May to 7th June, 1898—deepening the river bed to 12 feet depth at low summer water opposite the wharfs at these mills.

A quantity of 20,850 cubic yards of material, principally mud, was removed ; the spoils being deposited at a distance of half a mile.

### DREDGING AT FREDERICTON—YORK CO.

Fredericton, York county, the capital of the province of New Brunswick, on the St. John River is about 65 miles from St. John City to which point the river is navigable for sea going vessels. The city is a trade and manufacturing centre of some importance whence considerable lumber, produce and manufactures are shipped. The river St. John is here over a half mile wide and the department has in the past given much attention to its improvement by dredging.

During the fiscal year the dredge "New Dominion" was occupied from 6th August to 14th November in deepening the approaches to and along the public wharfs of the town and removed 37,525 cubic yards of sand and clay, making 11 feet water at low water. The spoil was deposited at a distance of about two miles.

### DREDGING ON GAGETOWN CREEK CANAL.

The shiretown of Queens county is Gagetown, on the river St. John, about 50 miles above St. John city. It has a population of about 300 and is the shipping place for a considerable farming district and is a growing summer resort. River steamers and other vessels call here. A part of the river forms a cul-de-sac from which a passage or canal has been excavated to the main channel to shorten the navigation required in calling at the wharfs. During the fiscal year the dredge "New Dominion" operated on this canal between the 10th and 30th June deepening to 10 feet a channel 52 feet wide and removing 6,000 cubic yards of clay to places of deposit about one mile distant.

### DREDGING AT THE JEMSEG, QUEENS COUNTY, N.B.

The Jemseg is an important affluent of the St. John River, which it enters about 49 miles above the city of St. John, and has considerable navigation of steam and sailing vessels.

The villages of Lower and Upper Jemseg and the piers are close to the entrance into the river ; they are places from which considerable produce is shipped by steamers.

Work has been done by the department in deepening and straightening the channel and during this fiscal year the dredge "New Dominion" operated here 1st to 30th July, removing 5,850 cubic yards of material, principally sand and silt, and making 11 feet depth at low water ; place of deposit about two miles distant.

### DREDGING AT MCLEAN'S WHARF, BURTON.

The dredge "New Dominion" rendered services at McLean's wharf, Burton, Sunbury county, 1st to 5th August, deepening the water in the river St. John up to the



wharf to 11 feet at low water summer level. 675 yards of hard pan were removed, the work proved troublesome, but the whole river bed was thoroughly gone over in front of the wharf.

DREDGING AT RICHIBUCTO, KENT COUNTY, N.B.

The Richibucto River, one of the most important in the province of New Brunswick, is frequented by a great deal of shipping annually, but the bar at its mouth is dangerous and subject to changes. A large quantity of dredging has been done at Richibucto, to improve the navigation, deepening the bars and shoals and straightening and deepening the channel.

Spring tides rise four feet, and neaps  $2\frac{1}{2}$  feet.

During the fiscal year the dredge "St. Lawrence" operated here from 1st August to 27th October deepening Albion channel to 12 feet L.W.S.T. by removing 24,150 cubic yards of sand, etc., to a place of deposit about two miles distant.

DREDGING AT INTERCOLONIAL RAILWAY TERMINUS, ST. JOHN.

The Dredge "Cape Breton" was engaged 14th December, 1897, to 26th January, 1898, and again 7th February to 23rd March, 1898, deepening and improving the harbour and making berths for the accommodation of seagoing vessels of the largest tonnage in connection with the Intercolonial Railway terminus at St. John.

The depth varied from 16 to 28 feet at L.W.S.T. at the north side of the wharf where a ledge of rock was met with in places. At the western front 28 feet water was secured. The quantity of material removed was 19,662 cubic yards of mud, sand, hard pan, etc., which was deposited at a distance of about two miles.

DREDGING AT MCAVITY'S WHARF, ST. JOHN HARBOUR.

The dredge "Cape Breton" was engaged about five days, 24th to 29th March, deepening and improving to 20 feet depth at L.W.S.T. around McAvity's wharf, which is an important shipping and landing place in St. John harbour.

Two thousand six hundred and forty cubic yards of gravel, mud, etc., were removed and deposited at a distance of about  $2\frac{1}{2}$  miles. The work was paid for by the proprietors of the wharf, Messrs. McAvity.

DREDGING AT LAWTON'S WHARF, ST. JOHN HARBOUR.

Lawton's wharf is another important wharf in St. John harbour adjacent to McAvity's above mentioned. Here the dredge "Cape Breton" was at work two days, 30th and 31st March, removing 570 cubic yards gravel and mud and deepening to 20 feet. Work paid for by the proprietors of the wharf.

DREDGING AT THORNE'S WHARF, ST. JOHN HARBOUR.

At Thorne's wharf the "Cape Breton" spent three days, 2nd to 5th April, deepening to 15 feet, 1,980 cubic yards of gravel and mud were removed. Work paid for by the proprietors.

DREDGING AT MARITIME NAIL CO.'S WHARF, ST. JOHN HARBOUR.

The Dredge "Cape Breton" was engaged at this wharf 12th to 14th April, deepening to 12 feet, 1,425 cubic yards of mud and stone removed. Dredging paid for by the proprietors.

DREDGING—MARITIME PROVINCES.

CLASSIFICATION OF DISBURSEMENTS OF Dredges operated by the Public Works Department, during the Year ended 30th June, 1898.

DREDGE "ST. LAWRENCE."

Items.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		Grand Totals.	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
Wages .....	484	15	471	13	481	69	483	33	562	21	483	33	389	60	182	33	202	59	483	17	483	33	483	33	5,190	19
Coal .....	722	58	319	20	.....	.....	45	90	247	45	.....	.....	164	79	.....	.....	142	54	.....	.....	.....	.....	793	04	2,435	50
Wood .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Provisions .....	250	39	106	02	.....	.....	219	56	77	60	53	00	115	37	40	44	.....	.....	75	84	.....	.....	298	55	1,236	77
Stores .....	19	75	13	42	.....	.....	.....	.....	.....	.....	2	55	19	03	.....	.....	.....	.....	.....	.....	.....	.....	108	75	163	50
Equipment .....	57	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	88	77	146	24	
Water .....	13	68	11	00	.....	.....	26	50	3	00	.....	.....	19	80	.....	.....	.....	.....	.....	.....	.....	8	64	82	62	
Repairs .....	434	61	152	18	30	75	149	95	309	04	.....	.....	33	75	3	47	.....	.....	67	07	1,198	92	49	54	2,429	28
Pilotage .....	50	00	97	50	65	00	60	00	86	00	54	00	10	00	.....	.....	.....	.....	26	00	52	00	52	00	552	50
Towage .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wharfage .....	.....	.....	.....	.....	.....	.....	80	00	678	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	758	76
Contingencies .....	.....	.....	24	08	10	02	2	45	5	90	1	50	15	01	21	86	.....	.....	5	63	.....	.....	2	42	38	87
Totals. ....	2,032	63	1,194	53	587	46	1,067	69	1,969	96	594	38	767	35	248	10	345	13	657	71	1,734	25	1,885	04	13,084	23
Working expenses . . .	1,598	02	1,042	35	556	71	917	74	903	28	594	38	733	60	244	63	142	54	540	38	535	33	1,835	50	9,644	46
Repairs, ordinary .....	90	00	Nil.	.....	30	75	149	95	.....	.....	.....	.....	33	75	3	47	.....	.....	.....	.....	.....	.....	49	54	357	46
" extraordinary .....	344	61	152	18	.....	.....	.....	.....	1,066	68	.....	.....	.....	.....	.....	.....	202	59	117	33	1,198	92	.....	.....	3,082	31
Totals.....	2,032	63	1,194	53	587	46	1,067	69	1,969	96	594	38	767	35	248	10	345	13	657	71	1,734	25	1,885	04	13,084	23



DREDGING—MARITIME PROVINCES—Continued.  
CLASSIFICATION OF DISBURSEMENTS of the Dredges operated by the Public Works Department during the Year ended 30th June, 1898.  
—Continued.

DREDGE "CANADA."

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages .....	403 00	403 00	403 00	403 00	403 00	312 38	155 00	155 00	160 52	231 82	403 00	400 19	3,832 91
Coal .....	274 50		288 50		292 61	2 37						591 05	1,449 03
Wood .....				54 02	124 65	164 86				65 43		136 20	787 48
Provisions .....	87 50	53 67	101 15		7 01	27 38	1 25			3 04		135 74	187 87
Stores .....	6 45	77 58	3 00		13 50	9 00	15 00			17 00		82 80	217 88
Equipment .....					5 80	2 10	2 00			18 50		4 20	32 60
Water .....	6 00	4 90	12 02		36 20	913 77	50 64	8 93	130 25	27 85	155 68	757 01	2,103 25
Repairs .....	52 00	38 00	48 00	66 00	60 00	214 73					46 00	52 00	362 00
Pilotage .....												141 00	355 73
Towage .....			1 85										2 35
Wharfage .....	0 50												
Contingencies .....	16 57	8 22		6 11		5 70	9 23	13 93	1 02		2 82	7 87	71 47
Totals .....	846 52	592 37	857 52	529 13	942 77	1,652 29	233 12	177 86	291 79	363 64	607 50	2,308 06	9,402 57
Working expenses .....	840 52	587 47	845 50	529 13	906 57	738 52	182 48	168 93		335 79	451 82	1,551 05	7,137 78
Repairs, ordinary .....	6 00	4 90	12 02		36 20	448 10	50 64	8 93			5 00	757 01	1,328 80
" extraordinary .....						465 67			291 79	27 85	150 68		935 99
Totals .....	846 52	592 37	857 52	529 13	942 77	1,652 29	233 12	177 86	291 79	363 64	607 50	2,308 06	9,402 57

Department of Public Works.

DREDGE "PRINCE EDWARD."

Wages.....	439 76	391 50	391 50	392 88	391 50	196 49	140 00	135 00	142 50	205 25	389 62	366 50	3,882 50
Coal.....		141 97		223 18									365 15
Provisions.....	27 11	56 62		294 80		109 82						171 39	736 06
Stores.....				12 01		10 43	2 26			1 75		2 02	78 39
Equipment.....				22 88		16 60						14 00	92 90
Water.....	25 00	25 00		49 18	25 00	16 57					25 00	25 00	215 75
Repairs.....	71 45	207 43		17 24	43 55	44 16	15 96	0 60			167 30	426 23	993 92
Towage.....		1,581 25			575 00		987 50					571 25	3,865 00
Contingencies.....	2 32	2 67		4 85	8 64	24 68						12 08	55 24
Totals.....	565 64	2,406 44	1,209 35	1,017 02	566 50	418 75	1,145 72	135 60	142 50	207 00	581 92	1,588 47	9,984 91
Working expenses.....	494 19	2,199 01	1,165 80	999 78	566 50	374 59	1,129 76	135 00		207 00	414 62	1,162 24	8,848 49
Repairs, ordinary.....		207 43	43 55	17 24		44 16	15 96	0 60				426 23	755 17
" extraordinary.....	71 45								142 50		167 30		381 25
Totals.....	565 64	2,406 44	1,209 35	1,017 02	566 50	418 75	1,145 72	135 60	142 50	207 00	581 92	1,588 47	9,984 91

DREDGE "NEW DOMINION."

Wages... ..	370 00	371 30	370 00	360 62	334 61	82 76	90 00	98 75	308 44	562 09	359 79	381 34	3,689 70
Coal.....	77 00		164 85							239 94		145 25	627 04
Provisions.....	62 20	60 76	44 06	59 77	4 80	33 28				121 85		99 36	486 08
Stores.....	2 40					0 56						112 31	115 27
Equipment.....												30 50	30 50
Water.....										10 00			10 00
Repairs.....	56 17		47 08	37 02	185 91					87 60	467 14	101 89	982 81
Towage.....	375 00	175 00	690 00	345 00	160 00	9 00				2 50		315 00	2,071 50
Wharfage.....										30 00			30 00
Contingencies..	5 59			2 60		11 31						4 80	24 30
Totals.. ..	948 36	607 06	1,315 99	805 01	685 32	136 91	90 00	98 75	308 44	1,053 98	826 93	1,190 45	8,067 20
Working expenses.....	892 19	607 06	1,268 91	767 99	499 41	136 91	90 00	98 75		635 11	359 79	1,088 56	6,444 68
Repairs, ordinary.....				37 02	45 01						15 00	101 89	198 92
" extraordinary.....	56 17		47 08		140 90				308 44	418 87	452 14		1,423 60
Totals.. ..	948 36	607 06	1,315 99	805 01	685 32	136 91	90 00	98 75	308 44	1,053 98	826 93	1,190 45	8,067 20



DREDGING—MARITIME PROVINCES—Continued.  
CLASSIFICATION OF DISBURSEMENTS of the Dredges operated by the Public Works Department during the Year ended 30th June, 1898—  
Continued.

DREDGE "GEO. MCKENZIE."

Items.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		Grand Totals.
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	
Wages .....	384	25	361	91	356	50	374	58	380	33	142	50	140	00	138	00	214	85	390	16	381	50	381	50	3,646 08
Coal .....					122	50			128	00									7	00	36	00	90	00	383 50
Provisions .....	64	38	75	91	57	69	53	59	60	26									48	42			185	29	545 54
Stores .....	11	24	10	73			41	45	10	30							6	64	1	76			115	71	197 83
Equipment .....					8	22	10	00					29	86							9	24	154	29	211 61
Water .....	81	00	78	00	60	00	36	00	51	00									18	00	66	00	42	75	432 75
Repairs .....	57	83	22	87	6	00	4	50					0	75	45	75	96	47	66	44			399	27	699 88
Towage .....	993	00	613	05	644	94	1,214	54	464	04									200	00			1,308	00	5,437 57
Contingencies .....	6	45	33	78	7	20	13	72	18	87	4	80	23	27	1	24	2	80	15	26			13	12	140 51
Totals .....	1,598	15	1,196	25	1,263	05	1,748	38	1,112	80	147	30	193	88	184	99	320	76	747	04	492	74	2,689	93	11,695 27
Working expenses .....	1,540	32	1,173	38	1,257	05	1,743	88	1,112	80	147	30	193	13	139	24	224	29	514	08	483	50	2,290	66	10,819 63
Repairs, ordinary .....	57	83			6	00	4	50					0	75									399	27	468 35
" extraordinary .....			22	87											45	75	96	47	232	96	9	24			407 29
Totals .....	1,598	15	1,196	25	1,263	05	1,748	38	1,112	80	147	30	193	88	184	99	320	76	747	04	492	74	2,689	93	11,695 27

Department of Public Works.

DREDGE "CAPE BRETON."

Wages .....	424 66	531 64	465 00	526 00	450 00	450 00	82 80	450 00	450 00	450 00	426 36	419 72	439 79	5,483 17
Coal .....	111 44	79 70	177 56	172 10	.....	.....	.....	.....	.....	.....	102 66	...	85 88	983 16
Wood .....	78 43	80 57	32 44	79 13	81 49	136 74	71 16	38 67	136 74	72 05	53 55	20 10	215 48	1,009 81
Provisions .....	.....	50 54	5 40	.....	83 57	10 30	.....	.....	10 30	21 88	.....	.....	131 34	303 03
Stores .....	303 48	509 10	.....	34 50	126 75	14 10	.....	.....	.....	7 14	77 10	50 00	175 38	1,297 55
Equipment .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	60 00	.....	25 45	85 45
Water .....	406 50	50 25	.....	345 26	637 58	62 58	811 58	.....	186 95	.....	101 92	214 63	363 06	3,180 31
Repairs .....	2 50	.....	1 25	.....	.....	59 00	107 00	.....	.....	327 00	23 50	.....	10 50	2 50
Pilotage .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	528 25
Towage .....	.....	.....	.....	.....	.....	.....	2 15	.....	.....	.....	.....	13 05	10 55	28 25
Wharfage .....	.....	.....	.....	2 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contingencies .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	1,327 01	1,301 80	731 65	1,159 49	1,379 39	714 50	1,524 69	714 50	783 99	958 94	845 09	717 50	1,457 43	12,901 48
Working expenses....	918 01	768 95	731 65	814 23	741 81	651 92	713 11	651 92	597 04	958 94	743 17	502 87	1,075 54	9,217 24
Repairs, ordinary...	213 73	.....	.....	100 46	177 00	62 58	811 58	62 58	186 95	.....	.....	.....	363 06	1,915 36
" extraordinary	195 27	532 85	.....	244 80	460 58	.....	.....	.....	.....	.....	101 92	214 63	18 83	1,768 88
Totals.....	1,327 01	1,301 80	731 65	1,159 49	1,379 39	714 50	1,524 69	714 50	783 99	958 94	845 09	717 50	1,457 43	12,901 48





Department of Public Works.

DREDGE "NEW DOMINION."

Hard-pan .....	625											625
Boulders .....												
Gravel and sand. ....				10,075	1,500							11,575
Clay and Sand. ....	1,000		4,000									5,000
Clay and stone .....											6,000	6,000
Sand—ordinary .....	10,350		9,600	1,000								20,950
Sand—very fine .....												5,850
Mud, chips, old logs, &c .....												
											3,025	20,850
Totals.....	11,975	13,600		11,075	1,500						13,475	70,850

DREDGE "PRINCE EDWARD."

Hard-pan .....													2,695
Boulders .....													
Gravel .....													
Clay and mud.....	9,405												
Clay, stone and sand .....													14,950
Sand—ordinary .....							2,000					4,905	9,740
Sand and mud.....													
Mud .....												900	8,435
													10,935
Totals.....	9,405	10,935	5,310	6,885	3,870						4,500	5,805	46,710

DREDGE "GEO. MCKENZIE."

Hard-pan .....													2,000
Boulders and mud.....													5,200
Gravel .....													
Clay .....													
Stone, oyster shells and mud .....													
Sand—ordinary .....													3,195
Mud .....													
Mud, sand and stone .....	4,320	6,075											5,310
													13,050
Totals. ....	4,320	6,075	4,995	5,805	6,210						7,875	3,330	40,050



DREDGING—MARITIME PROVINCES—Continued.  
CLASSIFICATION AND QUANTITIES of Material removed by Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "CAPE BRETON."

Description of Material dredged.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.
Hard-pan.....	.....	.....	.....	.....	200	.....	.....	.....	.....	.....	.....	.....	200
*Boulders and logs.....	.....	.....	.....	.....	.....	.....	.....	.....	3,210	.....	.....	.....	3,210
Gravel, sand and mud	.....	.....	.....	4,246	.....	.....	.....	.....	.....	.....	.....	.....	4,246
Clay.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clay, stone and boulders.....	.....	1,411	12,593	.....	.....	.....	2,415	6,945	8,430	.....	9,712	.....	23,716
Sand and mud.....	.....	.....	.....	.....	.....	1,872	.....	.....	.....	3,405	.....	7,285	19,662
Mud and stone	.....	12,143	.....	9,813	1,710	.....	.....	.....	.....	.....	.....	3,290	10,690
" edgings.....	3,645	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30,601
Totals.....	3,645	13,554	12,593	14,059	1,910	1,872	2,415	6,945	11,640	3,405	9,712	10,575	92,325

\* 131½ tons boulders and logs—allow 200 yards.

Department of Public Works

DREDGING—MARITIME PROVINCES—Continued.  
DETAILS OF DREDGING OPERATIONS for Fiscal Year ended 30th June, 1898.

Dredge.	Locality.	Dates.	Time.	Quantity, Cubic yards.	Expenditure at Locality.	Wintering, repairs, equip., and superinten- dence, <i>pro rata</i> .†	Total Cost.	Rate per cubic yard based on Total Expenditure
"St. Lawrence"	Yarmouth, Yarmouth Co., N.S.	July 1 to 30 & Nov. 12 to Dec. 31, Apr. 18 to Jun. 30	154 days....	55,825	\$ 4,566 09	\$ 4,319 52	\$ 8,885 61	0 15 91
"Canada"	Richibucto, Kent Co., N.B.	Aug. 1 to Oct. 27.....	88 "	24,150	2,640 66	2,496 98	5,137 64	0 21 27
	Port Mouton, Queen's Co., N.S.	July 1 to Aug. 10.....	41 "	9,270	984 78	961 44	1,946 22	0 20 99
	Lockeport, Shelburne Co., N.S.	Aug. 11 to Nov. 28 and May 2 to 9 (less Osborne)	82 "	28,170	2,806 53	2,739 91	5,546 44	0 19 67
"New Dominion"	Osborne	Betw. Oct. 13 and 20, ½ d.	4 "	990	73 53	71 78	145 31	0 14 67
	Barrington Pass (Sherrrow's Channel and Wharf), Shelburne Co., N.S.	May 10 to June 30.....	52 "	12,780	1,234 31	1,205 05	2,439 36	0 19 08
	Jenseg, Queen's Co., N.B.	July 1 to 30.....	30 "	5,850	876 60	552 78	1,429 38	0 24 43
	McLean's Wharf, Sunbury Co., N.B.	Aug. 1 to 4.....	4 "	625	111 36	70 23	181 59	0 29 05
	Fredericton, York Co., N.B.	" 5 to Nov. 4.....	91 "	37,525	2,775 66	1,750 31	4,525 97	0 12 06
"Prince Edward"	*Cushing's Mill, St. John Co., N.B.	Apr 21-28 & May 11-Jun 6	27 "	20,850	749 91	472 95	1,222 86	0 05 86
	Gagetown Creek Canal, Queen's Co., N.B.	June 10 to 30.....	24 "	6,000	788 82	497 54	1,286 36	0 21 44
	Ferry ship "Charlton," Queen's Co., P.E.I.	July 1 to 9.....	9 "	2,610	416 26	187 80	604 06	0 23 14
	*S. N. Co.'s Wharf, Queen's Co., P.E.I.	" 10 to 27.....	18 "	5,445	404 93	182 69	587 62	0 10 79
	Southport Ferry	" 28 to Aug. 28.....	32 "	12,285	1,364 73	615 28	1,980 00	0 16 11
	Summerside, Prince Co., P.E.I.	Sept. 1-25, Oct. 12-Nov. 25, May 3-28 & June 28-30.	100½ "	16,785	4,273 94	1,986 66	6,260 60	0 37 29
	*Holman's Wharf, S. side, Prince Co., P.E.I.	Sept. 25 to Oct. 11 and May 28 to June 28.....	46½ "	9,585	915 07	354 14	1,269 21	0 13 24
	Larry's River, Guysborough Co., N.S.	July 1 to Sept. 22.....	84 "	15,390	3,382 69	3,412 21	6,794 90	0 44 15
	Wallace, Cumberland Co., N.S.	Oct. 30 to Nov. 30 and April 21 to June 7.....	77 "	22,455	1,983 49	2,000 74	3,984 23	0 17 74
	Arisaig, Antigonish Co., N.S.	June 8 to 30.....	23 "	2,205	873 95	881 55	1,755 50	0 79 61
"Cape Breton"	*St. John winter berths	July 1 to Dec. 13 and May 16 to June 20.....	202 "	66,048	4,223 89	4,333 76	8,557 65	0 12 95
	" I. C. Ry. wharf.....	Dec. 4 to Jan. 26 and betw. Feb. 7 and Mar. 23	66 "	19,662	2,183 34	2,240 40	4,423 74	0 22 48
	*McAvity's.....	March 24 to 29.....	5 "	2,640	133 66	137 32	270 98	0 10 26
	*Lawton's.....	" 30 to 31.....	2 "	570	50 06	51 40	101 46	0 17 80
	*Thorne's.....	April 2 to 5.....	3 "	1,980	122 48	126 54	249 02	0 12 57
	"	" 11 to 14.....	3 "	1,425	110 67	113 85	224 52	0 15 77
	" Maritime Nail Co's.....			381,120	38,047 40	31,762 83	69,810 23	0 18 31

\* In these localities, towage not included; provided by owners of property. † *Pro rata* of each dredge's total working expenses, 1897-98, working expenses in each locality, viz.:—  
Dredge's expenditure in any one locality × Total wintering expenses, &c., of dredge.  
Sum of local expenditure of dredge.



DREDGING—MARITIME PROVINCES—Continued.  
EXPENDITURE FOR DREDGING in Nova Scotia for the twenty-six Years ended 30th June, 1898.

County.	Locality.	Total for the twenty-six Years ended 30th June, 1897.			For the Year 1897-98.			Total Quantity.	Total Cost.	Total cost for each County.
		Quantity.	Cost.	Cost for County.	Quantity.	Cost.	Cost for County.			
		c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.
Antigonish	Antigonish ..	22,025	3,649 15	.....	.....	.....	.....	22,025	3,649 15	36,828 19 1,635 68
	Harbour au Bouche.....	10,568	2,498 48	.....	.....	.....	.....	10,568	2,498 48	
	Tracadie.....	12,245	5,530 29	.....	.....	.....	.....	12,245	5,530 29	
	McNaire's Cove ..	11,265	10,035 68	.....	.....	.....	.....	11,265	10,035 68	
	Bayfield ..	12,871	9,505 79	.....	.....	.....	.....	12,871	9,505 79	
	Arisaig.....	3,540	3,853 30	35,072 69	2,205	1,755 50	1,755 50	5,745	5,608 80	
	Annapolis ..	2,825	1,635 68	1,635 68	.....	.....	.....	2,825	1,635 68	
	Lingan.....	22,267	9,275 56	.....	.....	.....	.....	22,267	9,275 56	
	Sydney.....	54,600	17,781 54	.....	.....	.....	.....	54,600	17,781 54	
	Little Glace Bay.....	46,450	16,936 02	.....	.....	.....	.....	46,450	16,936 02	
Cape Breton	Port Caledonia.....	17,413	8,242 21	.....	.....	.....	.....	17,413	8,242 21	66,207 29 20,373 07 36,945 05 5,084 91 20,179 65
	Benacadie Pond ..	20,860	5,993 90	.....	.....	.....	.....	20,860	5,993 90	
	Christmas Island ..	19,045	3,364 98	.....	.....	.....	.....	19,045	3,364 98	
	Cow Bay ..	3,255	1,892 32	.....	.....	.....	.....	3,255	1,892 32	
	Main à Dieu.....	4,680	2,720 76	66,207 29	.....	.....	.....	4,680	2,720 76	
	Tatamagouche ..	65,480	20,373 07	20,373 07	.....	.....	.....	65,480	20,373 07	
	Parrsboro' ..	42,595	12,804 68	.....	.....	.....	.....	42,595	12,804 68	
	Wallace.....	71,410	20,156 14	32,960 82	22,455	3,984 23	3,984 23	93,865	24,140 37	
	Digby ..	12,585	5,056 29	.....	.....	.....	.....	12,585	5,056 29	
	Weymouth ..	88	28 62	5,084 91	.....	.....	.....	88	28 62	
Guysboro'	Guysboro' ..	5,400	1,413 53	.....	.....	.....	.....	5,400	1,413 53	20,179 65
	Larry's River.....	32,265	9,724 95	.....	15,390	6,794 90	6,794 90	47,655	16,519 85	
	Port Mulgrave ..	3,532	1,749 78	.....	.....	.....	.....	3,532	1,749 78	
	Sherbrooke.....	1,260	456 49	13,384 75	.....	.....	.....	1,260	496 49	
	Chezetcook ..	3,920	2,593 71	.....	.....	.....	.....	3,920	2,593 71	
	Halifax Ferry.....	6,177	2,063 38	.....	.....	.....	.....	6,177	2,063 38	
	Herring Cove.....	26,101	12,049 68	.....	.....	.....	.....	26,101	12,049 68	
	Ketch Harbour ..	4,227	1,690 53	.....	.....	.....	.....	4,227	1,690 53	
	Richmond wharf.....	792	182 53	.....	.....	.....	.....	792	182 53	
	Roche's wharf.....	1,750	620 28	.....	.....	.....	.....	1,750	620 28	
Halifax	Halifax Railway, terminus.....	19,290	6,187 38	.....	.....	.....	.....	19,290	6,187 38	5,962 93
	Jeddore.....	21,515	4,958 56	.....	.....	.....	.....	21,515	4,958 56	
	North-west Arm.....	7,350	2,970 39	.....	.....	.....	.....	7,350	2,970 39	
	Cunard's wharf.....	1,400	530 04	.....	.....	.....	.....	1,400	530 04	
	Salmon River.....	14,288	5,962 93	.....	.....	.....	.....	14,288	5,962 93	

Department of Public Works.

Inverness	Spry Bay .....	10,665	3,075 72	.....	.....	.....	10,665	3,075 72	44,870 71
	Eastern Passage .....	2,070	596 97	.....	.....	.....	2,070	596 97	
	Saibro .....	4,815	1,388 61	.....	.....	.....	4,815	1,388 61	
	Whyoccomagh .....	19,760	3,491 31	.....	.....	.....	19,760	3,491 31	
	Campbell's Pond .....	4,940	872 83	.....	.....	.....	4,940	872 83	
	Port Hastings .....	270	190 37	.....	.....	.....	270	190 37	
	Cheticamp .....	170,740	52,863 40	.....	.....	.....	170,740	52,863 40	
	Mabou .....	128,347	49,126 92	.....	.....	.....	128,347	49,126 92	
	Port Hood .....	4,353	1,258 92	.....	.....	.....	4,353	1,258 92	
	Lunenburg .....	70,510	22,194 57	.....	.....	.....	70,510	22,194 57	
Lunenburg	Mahone Bay .....	21,844	5,958 65	.....	.....	.....	21,844	5,958 65	107,803 75
	Vogler's Cove .....	11,610	5,075 53	.....	.....	.....	11,610	5,075 53	
	Acadia Coal Co. wharf .....	12,310	4,093 81	.....	.....	.....	12,310	4,093 81	
	Albion Mines .....	9,475	2,181 25	.....	.....	.....	9,475	2,181 25	
	East River .....	144,407	47,696 43	.....	.....	.....	144,407	47,696 43	
	Halifax Coal Co. wharf .....	1,650	359 90	.....	.....	.....	1,650	359 90	
	Pictou Public wharf .....	7,020	1,634 82	.....	.....	.....	7,020	1,634 82	
	" Market wharf .....	78,250	21,687 04	.....	.....	.....	78,250	21,687 04	
	" Railway wharf .....	32,164	9,959 34	.....	.....	.....	32,164	9,959 34	
	" Landing wharf .....	7,345	2,880 01	.....	.....	.....	7,345	2,880 01	
Pictou	" Steam Ferry Co. slip .....	720	246 18	.....	.....	.....	720	246 18	33,228 75
	Vale Colliery .....	1,395	682 15	.....	.....	.....	1,395	682 15	
	River John .....	85,173	22,243 98	.....	.....	.....	85,173	22,243 98	
	Granton .....	25,110	10,707 59	.....	.....	.....	25,110	10,707 59	
	New Glasgow .....	35,445	11,795 79	.....	.....	.....	35,445	11,795 79	
	Middle River .....	15,060	4,984 40	.....	.....	.....	15,060	4,984 40	
	C. Dwyer's wharf .....	2,250	672 72	.....	.....	.....	2,250	672 72	
	" berth for SS. "Campana." .....	5,850	2,000 22	.....	.....	.....	5,850	2,000 22	
	Dwyer & Co.'s wharf .....	360	123 09	.....	.....	.....	360	123 09	
	Liverpool .....	33,730	9,960 70	.....	.....	.....	33,730	9,960 70	
Queens	Port Mouton .....	1,350	337 55	.....	.....	.....	1,350	337 55	143,948 72
	D'Escoisse .....	23,650	10,052 76	.....	.....	.....	23,650	10,052 76	
	St. Peter's Canal .....	90,830	27,435 95	.....	.....	.....	90,830	27,435 95	
	St. Peter's .....	7,150	2,407 41	.....	.....	.....	7,150	2,407 41	
	Grand Goulet .....	23,584	5,570 49	.....	.....	.....	23,584	5,570 49	
	River Bougeois .....	18,920	4,468 87	.....	.....	.....	18,920	4,468 87	
	Marine Slip .....	320	56 53	.....	.....	.....	320	56 53	
	Poultment .....	10,080	2,566 14	.....	.....	.....	10,080	2,566 14	
	Foucher Harbour .....	16,875	9,454 94	.....	.....	.....	16,875	9,454 94	
	Lockeport .....	34,048	10,591 41	.....	.....	.....	34,048	10,591 41	
Richmond	Barrington Pass and Sherrows Channel .....	24,580	10,085 07	.....	.....	.....	24,580	10,085 07	12,244 47
	Osborne .....	.....	.....	.....	.....	.....	.....	.....	
	Yarmouth .....	203,652	64,293 73	.....	.....	.....	203,652	64,293 73	
	Haunts .....	5,450	1,627 60	.....	.....	.....	5,450	1,627 60	
	Victoria .....	3,820	1,569 95	.....	.....	.....	3,820	1,569 95	
	Dredge "C. B." .....	.....	.....	.....	.....	.....	.....	.....	
	losses .....	.....	762 98	.....	.....	.....	.....	762 98	
	.....	.....	.....	.....	.....	.....	.....	.....	
	.....	.....	.....	.....	.....	.....	.....	.....	
	.....	.....	.....	.....	.....	.....	.....	.....	
Shelburne	.....	.....	.....	.....	.....	.....	.....	.....	62,013 09
	.....	.....	.....	.....	.....	.....	.....	.....	
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	.....	.....	.....	.....	.....	.....	.....	.....	
Yarmouth	.....	.....	.....	.....	.....	.....	.....	.....	28,807 59
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	.....	.....	.....	.....	.....	.....	.....	.....	
	.....	.....	.....	.....	.....	.....	.....	.....	
Hants	.....	.....	.....	.....	.....	.....	.....	.....	73,179 34
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	.....	.....	.....	.....	.....	.....	.....	.....	
Victoria	.....	.....	.....	.....	.....	.....	.....	.....	1,627 60
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	.....	.....	.....	.....	.....	.....	.....	.....	
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	.....	.....	.....	.....	.....	.....	.....	.....	
Dredge "C. B."	.....	.....	.....	.....	.....	.....	.....	.....	697,310 79
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	.....	.....	.....	.....	.....	.....	.....	.....	
	.....	.....	.....	.....	.....	.....	.....	.....	
	.....	.....	.....	.....	.....	.....	.....	.....	
losses	.....	.....	.....	.....	.....	.....	.....	.....	697,310 79
	.....	.....	.....	.....	.....	.....	.....	.....	
	.....	.....	.....	.....	.....	.....	.....	.....	
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	.....	.....	.....	.....	.....	.....	.....	.....	
	.....	.....	.....	.....	.....	.....	.....	.....	
Totals		2,017,281	665,813 22	147,085	31,497 57	31,497 57	2,164,366	697,310 79	697,310 79



DREDGING—MARITIME PROVINCES—Continued.  
EXPENDITURE FOR DREDGING in Prince Edward Island for the twenty-six years ended 30th June, 1898.

County.	Locality.	Total for the twenty-six Years ended 30th June, 1897.			For the Year 1897-98.			Total Quantity.	Total Cost.	Total cost for each County.
		Quantity.	Cost.	Cost for County.	Quantity.	Cost.	Cost for County.			
		c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.
King's.....	Grand River.....	76,170	15,304 04					76,170	15,304 04	
	Montague River.....	132,480	22,819 11					132,480	22,819 11	
	Murray Harbour, south.....	99,453	17,638 73					99,453	17,638 73	
	Sturgeon.....	16,026	6,066 27					16,026	6,066 27	
	St. Mary's wharf.....	21,963	4,752 55					21,963	4,752 55	
	Georgetown Ry. wharf.....	1,002	408 32					1,002	408 32	
	Cardigan bridge.....	35,955	8,619 36					35,955	8,619 36	
	Newport.....	3,240	917 82					3,240	917 82	
	Souris.....	3,825	1,083 53	77,609 73				3,825	1,083 53	77,609 73
Queen's.....	Charlottetown Ry. wharf.....	60,018	16,159 82					60,018	16,159 82	
	" Pownal wharf.....	14,193	2,963 50					14,193	2,963 50	
	" Ferry.....	7,465	1,402 93		2,610	604 06		19,075	2,606 99	
	" Steam Navigation Co..	7,668	4,904 15		5,445	587 62		13,113	5,491 77	
	" Connolly's wharf.....	9,978	4,409 68					9,978	4,409 68	
	" Peake Bros.....	12,195	5,362 46					12,195	5,362 46	
	" Queen St. slip.....	3,915	1,109 03					3,915	1,109 03	
	" Geo. Peake's wharf.....	5,805	1,644 42					5,805	1,644 42	
	" Poole's wharf.....	6,435	1,405 95					6,435	1,405 95	
	" McMillan's wharf.....	6,165	1,320 13					6,165	1,320 13	
	" Dom. Building Sewer..	5,355	1,146 68					5,355	1,146 68	
	Webster's Corner, East River.....	203	43 47					203	43 47	
	Crapaud, Victoria.....	109,652	31,747 99					109,652	31,747 99	
	Pownal Bay.....	33,610	6,536 20					33,610	6,536 20	
	Rocky Point.....	82,920	13,426 13					82,920	13,426 13	
	Vernon River.....	17,860	6,326 72					17,860	6,326 72	
	Wood Islands.....	2,780	548 00					2,780	548 00	
	Nine Mile Creek.....	31,650	6,286 46					31,650	6,286 46	
	Hickey's wharf.....	750	150 51					750	150 51	
	Carr's Point.....	12,165	2,441 28					12,165	2,441 28	
	Pinette.....	3,825	756 24					3,825	756 24	
	Fort Augustus.....	3,195	631 68					3,195	631 68	
	Southport Ferry.....	33,015	5,528 75		12,285	1,980 00		45,300	7,508 75	

Department of Public Works.

Prince.....	Red Point.....	7,161	3,879 60	.....	.....	.....	.....	7,161	3,879 60	.....
	North Rustico .....	13,536	4,775 38	.....	.....	.....	.....	13,536	4,775 38	.....
	South .....	11,649	4,109 67	.....	.....	.....	.....	11,649	4,109 67	.....
	Gauthier's Creek.....	17,847	8,305 50	137,322 33	.....	.....	3,171 68	17,847	8,305 50	140,494 01
	Summerside.....	29,396	8,013 37	.....	16,785	6,260 60	.....	46,181	14,273 97	.....
	Hurd's Point pier .....	41,070	7,289 95	.....	.....	.....	.....	41,070	7,289 95	.....
	Tignish .....	11,387	13,005 45	.....	.....	.....	.....	11,387	13,005 45	.....
	Casumpec.....	1,157	538 42	.....	.....	.....	.....	1,157	538 42	.....
	Cape Traverse .....	16,740	5,105 89	33,953 08	.....	.....	.....	16,740	5,105 89	.....
	Holman's wharf.....	.....	.....	.....	9,585	1,269 21	7,529 81	9,585	1,269 21	41,482 89
		1,010,874	248,885 14	248,885 14	46,710	10,701 49	10,701 49	1,057,584	259,586 63	259,586 63



DREDGING—MARITIME PROVINCES—Continued.

EXPENDITURE FOR DREDGING in New Brunswick for the twenty-six Years ended 30th June, 1898.

County.	Locality.	Total for the twenty-five Years ended 30th June, 1897.			For the Year 1897-98.			Total Quantity.	Total Cost.		Total cost for each County.
		Quantity.	Cost.		Quantity.	Cost.			\$	cts.	
			c. yds.	\$		cts.	c. yds.				
Gloucester Kent.	Bathurst	93,637	29,095	79	29,095	79	98,637	29,095	79	29,095 79	
	Richibucto.	116,078	38,863	55			140,228	44,001	19	44,001 19	
	Cocagne	27,180	9,601	45	24,150	5,137 64	27,180	9,601	45	9,601 45	
	Buctouche.	13,005	4,934	24			13,005	4,934	24	4,934 24	
	" Priest Point.	3,510	1,110	70			3,510	1,110	70	1,110 70	
King's.	" Chapel Point.	4,140	1,310	07			4,140	1,310	07	1,310 07	
	" Robertson's Wharf.	45	14	23	55,834 24		45	14	23	60,971 88	
	Bellisle Point.	60,170	8,156	76			60,170	8,156	76	8,156 76	
	Kennebecasis River	116,270	20,081	83			116,270	20,081	83	20,081 83	
	Moss Glen.	10,200	1,924	47	30,163 06		10,200	1,924	47	30,163 06	
Northumberland	Horse Shoe, Miramichi	208,892	55,058	36			208,892	55,058	36	55,058 36	
	Outer Bar	29,935	7,965	31			29,935	7,965	31	7,965 31	
	Grand Dune.	37,975	10,121	67			37,975	10,121	67	10,121 67	
	Gordian Flats	22,425	4,403	95	77,549 29		22,425	4,403	95	4,403 95	
	Grand Lake	93,555	16,372	96			93,555	16,372	96	16,372 96	
Queen's.	" Mc Mann's Cove.	20,440	4,522	82			20,440	4,522	82	4,522 82	
	Jemseg.	70,580	13,362	38			76,430	14,791	76	14,791 76	
	Waashademoak.	48,975	6,340	83			48,975	6,340	83	6,340 83	
	Grimross, Mid-ground.	12,040	3,274	99			12,040	3,274	99	3,274 99	
	Gagetown Creek Canal.	6,965	1,894	52			12,965	3,180	88	3,180 88	
Restigouche	Spoon Island	3,000	402	51	46,171 01		3,000	402	51	48,886 75	
	Dalhousie.	22,301	6,543	08			22,301	6,543	08	6,543 08	
	Traverse	110,810	21,415	93	27,959 01		110,810	21,415	93	27,959 01	
	L.C.R. Terminus.	139,810	37,130	01			159,472	41,553	75	41,553 75	
	Navy Island.	25,294	9,296	79			25,294	9,296	79	9,296 79	
St. John.	Marble Cove	29,925	4,374	40			29,925	4,374	40	4,374 40	
	Murray's Mills	23,880	3,441	65			23,880	3,441	65	3,441 65	
	Indiantown Wharf.	1,615	192	83			1,615	192	83	192 83	
	Long Wharf.	7,137	2,680	24			7,137	2,680	24	2,680 24	
	Millar & Woodman's.	9,275	1,090	42			9,275	1,090	42	1,090 42	
St. John.	Hayford & Stetson's.	8,015	942	29			8,015	942	29	942 29	
	International Wharf.	450	52	90			450	52	90	52 90	
	Adams Wharf.	7,513	3,247	29			7,513	3,247	29	3,247 29	

[illegible]

EXPENDITURE FOR DREDGING IN QUEBEC FOR THE TWENTY-SIX YEARS ENDED 30TH JUNE, 1898.

## From Appropriation, Maritime Provinces.

County.	Locality.	Total for the twenty-six Years ended 30th June, 1897.			For the Year 1897-98.			Total Quantities.	Total Cost.	Total Cost for each County.
		Quantity.	Cost	Cost for County.	Quantity.	Cost.	Cost for County.			
		c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.			
Magdalen Island, Co. Gaspé.	House Harbour .....	6,800	2,392 92	.....	Nil.	Nil.	Nil.	6,800	2,392 92	2,634 97
"	Amherst Harbour. ....	495	242 05	2,634 97	Nil.	Nil.	Nil.	495	242 05	825 47
Temiscouata.....	Rivière du Loup.....	2,587	825 47	825 47	Nil.	Nil.	Nil.	2,587	825 47	3,997 59
Rimouski . . . . .	Rimouski .....	8,123	3,997 59	3,997 59	Nil.	Nil.	Nil.	8,123	3,997 59	7,458 03
Total.....	.....	18,005	7,458 03	7,458 03	.....	.....	.....	18,005	7,458 03	



STATEMENT showing Quantities of Material removed and Cost of Work done in each Province, for the twenty-six Years ended 30th June, 1898.

FISCAL YEAR.	NOVA SCOTIA.		PRINCE EDWARD ISLAND.		NEW BRUNSWICK.		QUEBEC.		Total Quantity.	Total Expenditure	Cost per Cubic Yard.
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.			
c. yds.	\$ cts.	c. yds.	\$ cts.	c. yds.	\$ cts.	c. yds.	\$ cts.	c. yds.	\$ cts.	\$ cts.	
1872-73.....	23,260	8,422 70	.....	.....	38,060	13,240 50	.....	.....	61,320	21,663 20	0 35 328
1873-74.....	18,600	6,545 61	.....	.....	57,725	14,395 57	6,800	2,392 92	83,125	23,334 10	0 28 071
1874-75.....	24,416	13,238 83	18,655	9,892 89	78,223	17,325 05	.....	.....	121,294	40,456 77	0 33 354
1875-76.....	91,974	21,885 90	58,283	10,891 80	79,935	17,040 52	.....	.....	230,192	49,818 22	0 21 642
1876-77.....	127,785	34,846 74	74,460	12,758 27	97,690	23,161 90	.....	.....	299,935	70,766 91	0 23 594
1877-78.....	106,857	29,607 94	82,860	12,011 18	81,070	23,323 92	.....	.....	270,787	64,943 04	0 23 983
1878-79.....	116,307	28,267 59	46,490	9,164 07	132,555	27,400 22	.....	.....	295,352	64,831 88	0 21 951
1879-80.....	127,684	34,765 84	36,390	12,674 98	63,540	16,581 79	765	374 08	228,379	64,396 69	0 28 197
1880-81.....	87,118	23,061 64	46,335	9,298 53	44,315	12,385 85	2,317	693 44	180,085	45,439 46	0 25 232
1881-82.....	89,566	33,363 71	47,325	9,356 57	79,640	18,626 87	.....	.....	216,531	61,347 15	0 28 331
1882-83.....	143,616	42,996 93	68,535	11,080 37	48,565	13,422 70	.....	.....	260,716	67,500 00	0 25 890
1883-84.....	157,560	49,050 58	79,750	13,355 05	47,058	17,103 38	8,123	3,997 59	284,368	79,509 01	0 27 959
1884-85.....	76,164	25,250 73	55,075	8,668 01	128,997	24,460 35	.....	.....	268,359	62,376 68	0 23 242
1885-86.....	56,790	21,482 05	17,137	10,349 66	68,505	14,874 63	.....	.....	142,432	46,706 34	0 32 792
1886-87.....	53,400	25,621 19	6,137	6,214 74	69,440	11,452 86	.....	.....	128,977	43,288 79	0 33 56
1887-88.....	84,175	29,847 60	3,775	5,899 90	50,152	9,252 50	.....	.....	138,102	45,000 00	0 32 58
1888-89.....	56,910	32,697 00	24,240	15,502 95	63,633	16,598 08	.....	.....	144,783	64,798 03	0 27 29
1889-90.....	59,783	22,821 55	31,422	11,085 39	86,068	20,544 93	.....	.....	177,273	54,451 87	0 30 71
1890-91.....	61,698	24,386 57	19,004	8,843 62	96,588	20,375 06	.....	.....	177,290	53,605 55	0 30 23
1891-92.....	81,993	27,376 08	31,382	12,788 34	75,023	20,592 85	.....	.....	188,398	60,757 27	0 32 249
1892-93.....	40,834	18,125 58	66,585	15,112 83	108,035	23,742 26	.....	.....	215,454	56,980 67	0 26 44
1893-94.....	59,581	28,664 99	61,536	12,269 24	77,505	21,564 27	.....	.....	198,622	62,498 50	0 31 46
1894-95.....	105,463	32,202 70	48,060	10,428 90	59,715	13,630 11	.....	.....	213,238	56,261 71	0 26 38
1895-96.....	36,428	15,828 89	36,360	10,299 93	98,905	21,352 63	.....	.....	171,693	47,481 45	0 27 65
1896-97.....	84,735	22,080 46	51,078	10,937 62	203,975	34,050 86	.....	.....	339,788	67,068 94	0 19 73
1897-98.....	147,085	31,497 57	46,710	10,701 49	187,325	27,611 17	.....	.....	381,120	69,810 23	0 18 31
	2,119,782	683,936 97	1,057,584	259,586 63	2,222,242	494,110 83	18,005	7,458 03	5,417,613	1,445,092 46	0 26 67

STATEMENT showing the Quantities of Material removed and Cost of Work done in each Province, by hand dredging, for the twenty-six Years ended 30th June, 1898.

Department of Public Works.

FISCAL YEAR.	NOVA SCOTIA.		PRINCE EDWARD ISLAND.		NEW BRUNSWICK.		QUEBEC.		Total Quantity.	Total Expenditure	Cost per Cubic Yard
	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.			
c. yds.	\$ cts.	c. yds.	\$ cts.	c. yds.	\$ cts.	c. yds.	\$ cts.	c. yds.	\$ cts.		
1878-79.	245	555 13	.....	.....	.....	.....	.....	.....	245	555 13	2 26 58
1879-80	12,370	3,666 90	.....	.....	.....	.....	.....	.....	12,370	3,666 90	0 29 64
1880-81	11,140	2,560 25	.....	.....	.....	.....	.....	.....	11,140	2,560 25	0 22 98
1881-82	10,640	2,650 00	.....	.....	.....	.....	.....	.....	10,640	2,650 00	0 24 90
1882-83	8,190	2,500 00	.....	.....	.....	.....	.....	.....	8,190	2,500 00	0 30 52
1883-84.	5,460	2,500 00	.....	.....	.....	.....	.....	.....	5,460	2,500 00	0 45 78
1884-98.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	48,045	14,432 28	.....	.....	.....	.....	.....	.....	48,045	14,432 28	0 30 03



STATEMENT showing quantities of Material removed by, and Expenditure of each Dredge during the twenty-six years ended the 30th June, 1898.

Dredge.	Total quantities and cost for twenty-six Years ended 30th June, 1897.			Fiscal Year 1897-98.			Total for twenty-six Years ended 30th June, 1898.		
	Total Quantity.	Total cost.	Cost per cubic yard.	Quantity.	Total cost.	Cost per cubic yard.	Total Quantity.	Total cost.	Cost per cubic yard.
	c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.
"St. Lawrence "	1,066,474	306,886 45	0 28·77	79,975	14,023 25	0 17·53	1,146,449	320,909 70	0 27·99
"Canada "	721,969	241,245 03	0 33·41	51,210	10,077 33	0 19·67	773,179	251,322 36	0 32·50
"New Dominion "	1,107,805	209,678 33	0 18·96	70,850	8,646 16	0 12·20	1,178,655	218,324 49	0 18·52
"Prince Edward "	1,004,964	245,530 18	0 24·43	46,710	10,701 49	0 22·91	1,051,674	256,231 67	0 24·36
"Cape Breton "(old)	534,938	139,074 33	0 25·99	.....	.....	.....	534,938	139,074 33	0 25·99
"Geo. McKenzie "	533,860	214,231 48	0 40·12	40,050	12,534 63	0 31·29	573,910	226,766 11	0 39·51
"Cape Breton "	54,918	12,138 84	0 22·10	92,325	13,827 37	0 14·97	147,243	25,966 21	0 17·63
Totals.	5,024,928	1,368,784 64	0 27·03	381,120	69,810 23	0 18·31	5,406,048	1,438,594 87	0 26·61

STATEMENT showing quantities of Material removed by hand dredging and Expenditure incurred at each locality for twenty-six years ended 30th June, 1898.

Locality.	Total quantities and cost for twenty-six Years ended 30th June, 1897.			Fiscal Year 1897-98.			Total for twenty-six Years ended 30th June, 1898.		
	Total Quantity.	Total Cost.	Cost per cubic yard.	Quantity.	Total Cost.	Cost per cubic yard.	Total Quantity.	Total cost.	Cost per cubic yard.
	c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.
Parrsboro', N. S. . . . .	42,595	12,804 68	0 30·06	Nil . . . . .	Nil . . . . .	. . . . .	42,595	12,804 68	0 30·06
Windsor, N. S. . . . .	5,450	1,627 60	0 29·86	Nil . . . . .	Nil . . . . .	. . . . .	5,450	1,627 60	0 29·86
Totals . . . . .	48,045	14,432 28	0 30·03	. . . . .	. . . . .	. . . . .	48,045	14,432 28	0 30·03



## PROVINCE OF QUEBEC.

## SHIP CHANNEL, RIVER ST. LAWRENCE, BETWEEN QUEBEC AND MONTREAL.

See *Illustration S in accompanying pocket.*

During the fiscal year dredging operations were carried on, on the ship channel at the following places, between Quebec and Montreal; five elevator dredges being employed on this work.

## STE. CROIX.

The further deepening of the southern half of the ship channel, at Ste. Croix, was continued by dredge "Laurier" from the 1st of July until the 19th October, 1897.

A quantity of 94,200 cubic yards of sand and stones was removed—at a cost of \$10,706.34 or at the rate of  $11\frac{36}{100}$  cents per yard.

The "Laurier" was removed to Contrecoeur, where she worked until the 24th November, 1897. In the spring of 1898, dredging was resumed on the 21st of April and continued up to the 23rd May.

The quantity of material removed at Contrecoeur is 110,670 cubic yards clay and stones, and the cost \$7,593.07, which gives a rate of  $6\frac{86}{100}$  cents per yard.

At the end of May, 1898, the "Laurier" was again taken to Ste. Croix, where she worked until the end of the fiscal year,—removing an additional quantity of 13,900 yards of material at a cost of \$1,599.81 or  $11\frac{36}{100}$  cents per cubic yard.

## LOTBINIÈRE.

Dredge "Laval" continued the deepening of the south half of the ship channel, to 29 feet at Barre à Boulard. From the first of July to the 19th of November, and from the 30th May it continued to dredge up to the close of the fiscal year.

The materials dredged consist of stones, hard pan and boulders; 36,671 cubic yards being removed at a cost of \$22,634.93, or at the rate of  $61\frac{72}{100}$  cents per yard.

## ILE ST. OURS.

At the beginning of the fiscal year, dredge "No. 12" continued widening and deepening the Bell Mouth, at Ile St. Ours, in the Contrecoeur channel, to 29 feet, working there till the 14th of August, 1897.

Quantity of materials removed, clay and sand, 51,471 yards, at a cost of \$5,075.56, or  $9\frac{86}{100}$  cents per cubic yard.

The dredge was removed to Pointe Citrouille, and worked till the 6th October, 1897, cleaning up the channel by removing 33,800 yards of sand and stones, at a cost of \$5,513.70, or  $16\frac{31}{100}$  per cubic yard.

From Pointe Citrouille, "No. 12" was taken to Champlain, where she continued work until the 15th of November, removing 13,520 yards of sand and stones at a cost of \$4,103.32, or  $30\frac{35}{100}$  cents per yard.

This dredge worked at Longue Pointe until the 23rd November, 1897, removing 1,280 cubic yards of sand and stones, at a cost of \$769.35, or  $60\frac{10}{100}$  cents per cubic yard.

## Department of Public Works.

On the 25th of May "No. 12" was again placed at work at Ile St. Ours, where she dredged until the 17th of June, removing 36,953 cubic yards of clay and sand, at a cost of \$3,643.63, or  $9\frac{86}{100}$  cents per yard.

The dredge was then taken to Pointe aux Trembles, where she worked on some isolated shoals, till the close of the fiscal year. Quantity of material removed, hard pan and gravel, 1,800 cubic yards; the total cost amounting to \$897.73, which gives a rate of  $49\frac{86}{100}$  cents per cubic yard.

### POINTE AUX TREMBLES (en haut).

On the first of July, 1897, Dredge "No. 11" was working at Pointe aux Trembles, cleaning up and deepening the channel to 28' 6" at low water. She remained at work here until the 12th August, removing 19,512 yards of clay, gravel and stones, at a cost of \$3,181.62, or  $16\frac{30}{100}$  cents per yard.

This dredge was taken to Longue Pointe, where she worked on the south side of the channel up to 16th October, removing a portion of an isolated shoal; 25,969 cubic yards of gravel and stones were removed, at a cost of \$5,109.88, or  $19\frac{67}{100}$  cents per yard.

"No. 11" was then taken to Contrecoeur, where she worked up to 24th November, cleaning up the channel. In the spring of 1898, dredging was resumed on the 21st April and continued until the end of the fiscal year.

Quantity dredged: 165,641 yards of clay and sand, at a cost of \$9,544.87, or  $5\frac{73}{100}$  cents per yard.

### MONTREAL HARBOUR.

On the 1st of July 1897, dredge "No. 8" was working in the harbour of Montreal, where she continued to dredge till the 23rd November, removing 20,100 yards of sand, stones and gravel, at a cost of \$10,796.37, or  $53\frac{71}{100}$  cents per yard.



ABSTRACT OF WORK done, in Deepening the Ship Channel in the St. Lawrence

Name of Vessel.	Locality of Dredging.	Time of Service.		Nominal working time 10 hours per day.		Dredging machinery in motion.		Quantity dredged in cubic yards, scow measurement.		
		Dates.	Total days.	Hours.	Total hours.	Hours.	Total hours.	Earth.	Rock.	Total.
Dredge Laurier...	Ste. Croix. ....	100	.....	1,000	.....	602 $\frac{3}{4}$	.....	108,100	.....	.....
" ..	Contrecoeur .....	62	162	620	1,620	360 $\frac{1}{2}$	963 $\frac{1}{4}$	110,670	.....	218,770
Dredge Laval....	Lotbinière .....	150	150	1,500	1,500	943 $\frac{3}{4}$	943 $\frac{3}{4}$	.....	36,671	36,671
Dredge No. 11....	Pte. aux Trembles..	33	... ..	330	...	263	.....	19,512	.....	.....
	Longue Pointe.....	53	.....	530	.....	356	.....	25,969	.....	.....
" ....	Contrecoeur .....	99	185	990	1,850	885 $\frac{1}{4}$	1,474 $\frac{1}{4}$	165,641	.....	211,122
Dredge No. 12....	Ile St. Ours.....	67	... ..	670	...	468 $\frac{1}{4}$	.....	88,425	.....	.....
" ....	Pointe Citrouille....	43	.....	430	.....	321 $\frac{1}{2}$	.....	33,800	.....	.....
" ....	Longue Pointe.....	8	.....	80	...	54	.....	1,280	.....	.....
" ....	Champlain.....	32	.....	320	.....	189	.....	13,520	.....	.....
	Pte. aux Trembles..	6	156	60	1,560	50 $\frac{1}{2}$	1,083 $\frac{1}{4}$	1,800	.....	138,825
Dredge No. 8....	Montreal Harbour..	124	124	1,240	1,240	1,035	1,035	20,100	.....	20,100
	Totals.....	.....	777	...	7,770	.....	5,599 $\frac{1}{4}$	.....	36,671	625,488

# Department of Public Works.

River between Quebec and Montreal, for Fiscal Year ended 30th June, 1898.

Materials.	Quantity dredged, in cubic yards, in each locality.								
	Ste. Croix.	Contrecoeur.	Lotbinière.	Pointe aux Trembles.	Longue Pointe.	Ile St. Ours.	Pointe Citrouille.	Champlain.	Montreal Harbour.
Sand and stones .....	108,100								
Clay and stones.....		110,670							
Stones and boulders.....			36,671						
Stones and gravel. ....				19,512					
" " .....					25,969				
Clay. ....		165,641							
Clay and sand . . . .						88,425			
Sand and stones.....							33,800		
" .....					1,280				
" .....								13,520	
" .....				1,800					
" .....									20,100
Totals.....	108,100	271,311	36,671	21,312	27,249	88,425	33,800	13,520	20,100



DREDGING SHIP CHANNEL, RIVER ST. LAWRENCE, between Montreal and Québec—

Vessels.	Fuel.	Wages.	Board.	Stores and Materials.	Rebuilding and Repairs.	Expenditure on new Plant and Ship-yard improvements.	Proportion of general Maintenance expenses, inclusive of surveys, inspection, etc.	Total expenditure for each vessel.	Total expenditure for each service.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Dredge Laurier	1,924 70	3,232 56	1,027 51	1,110 76	2,400 16	.....	4,445 99	14,141 68	65,841 1
"	.....	.....	.....	.....	.....	.....	.....	.....	
Dredge Laval.	1,768 35	3,177 29	981 57	1,867 51	3,749 59	.....	5,293 65	16,837 90	
" No. 11.	1,500 85	2,847 82	1,090 66	1,251 67	2,045 14	.....	4,005 98	12,742 12	
" "	.....	.....	.....	.....	.....	.....	.....	.....	
" No. 12.	2,060 92	2,699 21	891 35	1,337 33	3,340 16	.....	4,736 64	15,065 51	
" "	.....	.....	.....	.....	.....	.....	.....	.....	
" "	.....	.....	.....	.....	.....	.....	.....	.....	34,598 26
" No. 8..	1,178 85	1,853 44	728 96	523 55	551 45	.....	2,217 68	7,053 93	
Stone Lifter No. 2.	111 95	442 56	121 98	193 26	136 54	.....	461 44	1,467 73	
Tug St. Jean Iberville.	782 35	1,855 35	541 93	462 41	291 68	.....	1,803 82	5,737 54	
Tug Cartier ...	597 55	1,436 10	437 72	205 54	291 38	.....	1,361 00	4,329 29	
" M. F. Parsons.	981 55	1,418 13	521 40	152 20	419 33	.....	1,601 55	5,094 16	
Tug St. Francis	941 05	912 00	297 37	83 11	332 40	.....	1,176 61	3,742 54	
" C. J. Brydges.	728 07	1,433 09	421 78	167 99	634 33	.....	1,552 32	4,937 58	
Tug Jno. Pratt	1,393 90	1,809 10	901 77	643 54	691 62	.....	.....	5,439 93	101,907 13
" St. James.	977 40	1,880 78	631 21	596 13	1,231 70	.....	.....	5,317 22	
Hy. Survey....	.....	.....	.....	.....	.....	.....	.....	.....	
New Dredge Plant.	.....	.....	.....	.....	.....	.....	.....	.....	
New Steel Dredge No. 3	.....	.....	.....	.....	.....	23,481 32	.....	.....	
New Steel Dredge No. 4	.....	.....	.....	.....	.....	21,816 34	.....	.....	
New tug Emilia.	.....	.....	.....	.....	.....	8,527 71	.....	.....	
New dumping Scow (150 yds.)	.....	.....	.....	.....	.....	12,091 32	.....	.....	
New sounding Scow.	.....	.....	.....	.....	.....	1,955 68	.....	.....	
New coal Barge	.....	.....	.....	.....	.....	5,886 03	.....	.....	
Semaphore,....	.....	.....	.....	.....	.....	604 27	.....	.....	
New boiler shop and machinery	.....	.....	.....	.....	.....	6,986 87	.....	.....	
Total. ....	14,947 49	24,997 43	8,595 15	8,595 00	16,115 48	82,349 53	28,736 68	101,907 13	101,907 13

Department of Public Works.

CLASSIFICATION OF DISBURSEMENTS for Fiscal Year ended 30th June, 1898.

Stone Lifter Service.	Tug Service.	Survey Service.	Total cost of working each dredge and attending Plant.	Number of working Days. Hours of actual Work.	Total cost for each Locality.	Number of cubic Yards Dredged.	Cost per Yard.	Kind of material removed	Locality of dredging.
\$ cts.	\$ cts.	\$ cts.	\$ cts.		\$ cts.		\$ cts.		
.....	5,737 54	.....	19,879 22	100 602 <sup>3</sup> / <sub>4</sub>	12,286 15	108,100	11 <sup>36</sup> / <sub>100</sub>	Sand and stones.	Ste. Croix.
.....	.....	.....	.....	62 360 <sup>1</sup> / <sub>4</sub>	7,593 07	110,670	6 <sup>86</sup> / <sub>100</sub>	Clay and stones.	Contrecoeur.
.....	4,329 29	.....	22,634 93	150 943 <sup>3</sup> / <sub>4</sub>	22,634 93	36,671	61 <sup>72</sup> / <sub>100</sub>	Stones and boulders.	Lotbinière.
.....	5,094 25	.....	17,836 37	33 263	3,181 62	19,512	16 <sup>30</sup> / <sub>100</sub>	Stone and gravel.	Pointe-aux-Trembles.
.....	.....	.....	.....	53 356	5,109 88	25,969	19 <sup>67</sup> / <sub>100</sub>	"	Longue-Pte.
.....	.....	.....	.....	99 855 <sup>1</sup> / <sub>4</sub>	9,544 87	165,641	5 <sup>67</sup> / <sub>100</sub>	Clay	Contrecoeur.
.....	4,937 58	.....	20,003 19	67 468 <sup>1</sup> / <sub>4</sub>	8,718 99	88,425	9 <sup>80</sup> / <sub>100</sub>	Clay and sand	Ile St. Ours.
.....	.....	.....	.....	43 321 <sup>1</sup> / <sub>2</sub>	5,513 70	33,800	16 <sup>31</sup> / <sub>100</sub>	Sand and stones.	Pointe Ci-trouille.
.....	.....	.....	.....	6 54	769 35	1,280	60 <sup>10</sup> / <sub>100</sub>	"	Longue Pte.
.....	.....	.....	.....	32 189	4,103 32	13,520	309 <sup>35</sup> / <sub>100</sub>	"	Champlain.
.....	.....	.....	.....	8 50 <sup>1</sup> / <sub>2</sub>	897 73	1,800	49 <sup>86</sup> / <sub>100</sub>	.....	Pointe-aux-Trembles.
.....	3,742 54	.....	10,796 37	1241,035	10,796 37	20,100	534 <sup>71</sup> / <sub>100</sub>	Sand and stones.	Montreal Harbour.
1,467 73	.....	.....	.....	.....	.....	.....	.....	.....	Lotbinière.
.....	.....	.....	5,439 93	.....	.....	.....	.....	.....	.....
.....	.....	.....	5,317 22	.....	.....	.....	.....	.....	.....
.....	.....	22,615 04	.....	.....	.....	.....	.....	.....	.....
1,467 73	23,841 20	22,615 04	124,522 17	777 5,599 <sup>1</sup> / <sub>4</sub>	91,149 98	625,488	.....	.....	.....



## DREDGING AT CHARLEMAGNE.

Charlemagne, in the county of L'Assomption, is a small village on river L'Assomption, opposite the lower or eastern end of the island of Montreal, and 16 miles distant from the city of Montreal.

Dredge "No. 7" worked at this place between the 16th of August and the 7th of October, deepening and improving the channel leading to the lumber wharfs and in front of the wharfs.

Several shoals and a number of large boulders were removed.

The depth of water is 12 feet at low water, and the quantity of material removed 24,000 cubic yards of sand, clay, boulders and gravel.

## DREDGING AT CHATEAUGUAY.

Chateauguay Basin is at the mouth of Chateauguay River, 14 miles south-west of Montreal.

During the fiscal year, the dredge "Little Giant" was engaged between the 2nd of July and the 6th of November, and the 10th and 30th of June, in dredging on shoals at the entrance to the river, in the river, and alongside the Nun's wharf. A depth of nine feet was made on the shoals, and seven feet in the river, 43,590 cubic yards of hard-pan, boulders, clay and sand being removed.

It has been found from experience that many of the boulders which are too large to be removed by the dredge, and can only be rolled back from the cuts, are washed back by the swift currents which obtain in the spring.

In order to make this work of permanent benefit, the services of a stone lifter are required to transport the boulders to a safe distance from the channel.

## DREDGING AT COTEAU LANDING.

Coteau Landing, the chief town of the county of Soulanges, is on the north side of the St. Lawrence River, 36 miles west of Montreal.

In 1897-98 three dredges were employed at this place for the purpose of opening a channel leading to the new elevator. Dredge "No. 4" was at work between the 8th of May and 10th of June, dredge "No. 5" between the 7th and 21st of May, and dredge "No. 6" between the 16th of April and the 30th June.

On the western side of the new elevator, a cutting was made about 800 feet in length and having a width of 150 feet at the outer end, or in line with the front of the elevator, and a width of 120 feet at the shore end, the depth worked being 14 feet, with the exception of an area of about 600 feet in length and 30 feet in width, in the center, which was dredged to 10 feet in depth.

A cut 380 feet long was made to nine feet in depth, from deep water to the western railway track, in order to enable barges to load direct from the cars.

A total quantity of 62,800 cubic yards of clay, sand and boulders was removed.

## DREDGING AT ISLE GROS BOIS.

Isle Gros Bois is an island in the river St. Lawrence, five miles below Montreal.

On the 7th of October Dredge "No. 1" began operations and continued working until the 27th November, the dredging done being in connection with the construction of a new wharf.

The dredge was employed for the same purpose on the 29th and 30th of June. Adjoining cuts of 300, 280, 200, 165, and 62 feet in length were made, the first three cuts having a width of 15 feet, and the last two 25 feet. Cuts were made to a depth of eight feet, with the exception of the 62-foot cut, where the depth worked was 10 feet. 8,930 cubic yards of clay was taken out.

## Department of Public Works

### DREDGING AT LAPRAIRIE.

Laprairie, is the "chef-lieu" of the county of the same name, on the south shore of the river St. Lawrence and is 7 miles above Montreal.

One of the Richelieu and Ontario Navigation company's steamers plies between Laprairie and Montreal, making several trips daily.

Between the 24th of May and the 30th of June, the dredge "T. F. M. No. 1" was employed here in deepening and enlarging the channel leading to the wharf, from the main channel in the river.

The depth of water made was 7 feet below low water mark, and 8,850 cubic yards of hard-pan, clay and stones was removed.

### DREDGING AT LONGUEUIL.

Longueuil, the "chef-lieu" of the county of Chambly, is situated on the south shore of the river St. Lawrence, nearly opposite the city of Montreal.

From the 10th of May to the 9th of June, the dredge "Little Giant" was engaged in deepening to 10 feet at low water in the St. Lawrence, near the outer end of the Government pier, with a view of preparing the ground for the reconstruction of the outer upper corner of the pier which has been shoved bodily by ice from 12 to 18 feet down stream, for a length of over 200 feet.

Quantity of material dredged, 6,300 cubic yards.

### DREDGING IN THE RIVER RICHELIEU.

The River Richelieu leaves Lake Champlain at its northern extremity, and after a course of 80 miles, enters the River St. Lawrence at Sorel, at the head of Lake St. Peter.

Between the 2nd and 10th of July, dredge "No. 1" made one cut 165 feet long, 25 feet wide, and 8 feet deep, at the entrance of the north channel of the river opposite Ile aux Noix, removing 1,540 cubic yards of clay and fine sand.

The same dredge was again employed, from the 14th of July to the 1st of October, near Belœil, preparing ground for cribwork. Two cuts of 330 feet in length having a total width of 50 feet over all, and 8 feet in depth, were made in this connection.

Four old piers were removed, with the shoals that had formed between them.

Quantity of material dredged: 8,385 cubic yards of very fine sand, clay, and boulders.

### DREDGING IN THE RIVER ST. FRANCIS.

The River St. Francis rises in Lake St. Francis, Wolfe County, and flows into the River St. Lawrence, near the upper end of Lake St. Peter.

Continuing the work carried on during last fiscal year, the dredge "St. Louis" was further employed on this river, between the 1st of July and the 4th of November, and from the 20th of June to the close of the fiscal year.

At the mouth of the river, two cuts 900 feet long by 50 feet wide, were completed to a depth of 5 feet and at the first bend of the stream above the mouth, two cuts 1,800 feet long, by 50 feet wide were finished to the same depth. A short distance below Tourville's Mills; two cuts 1,200 feet long by 50 feet wide, were made in the channel to the same depth of 5 feet, and in front of Tourville's wharf two cuts were made 400 feet long, to a depth of 7 feet.

Altogether, 20,170 cubic yards of clay and sand were removed from the river St. Francis, during the fiscal year.

### DREDGING AT POINTE AUX TREMBLES (en haut).

Pointe aux Trembles (en haut), Hochelaga County, is on the Island of Montreal, distant 10 miles from the city of Montreal.



Between the 2nd of May and the 23rd of June, dredge "No. 1" was employed in dredging from the wharf to deep water. making a depth of 10 feet at low water. Adjoining cuts of 170, 180, 190, 200, 195, 110, 190, 80, 70 and 60 feet in length were made, each cut being 25 feet in width. A shoal, distant about 300 yards from the front of the wharf, was also removed.

7,320 cubic yards of clay, hard pan and boulders were displaced here. in 1897-98.

#### DREDGING AT ST. JEAN DESCHAILLONS.

St. Jean Deschaillons, Lotbinière county, is on the south shore of the River St. Lawrence, 57 miles south west of Quebec.

In 1897-98, the dredge "Nithsdale" was kept at work in this locality, from the 20th of July to the 11th of October and from the 4th of May to the 30th of June.

Dredging was done in the channel leading to the Brickyard wharfs and in front of the wharfs to a depth of 9 feet at low water. Four adjoining cuts of 1,750, 1,019, 950 and 850 feet in length respectively were made, each cut having a width of 25 feet. 47,705 cubic yards of clay and boulders were removed.

Stone Lifter "No. 1" was also engaged between the 5th of September and the 8th of October, and between the 1st and 30th of June, in removing the large boulders, from the channel in front of the wharfs, which were loosened by the dredge, 231 cubic yards of such boulders being taken out.

#### DREDGING AT ST. MICHEL.

St. Michel, the "chef lieu" of the County of Bellechasse, is on the south shore of the St. Lawrence, about 15 miles below Lévis.

The dredge "St. Louis" was engaged at St. Michel, from the 22nd May to the 17th June, 1898.

The work performed consisted principally in the loosening of large boulders to be raised by the stone lifter, and the removal of as many small boulders as the dredge could easily handle. Two cuts, 40 feet long and 50 feet wide, were also made in front of the wharf to 7 feet depth at low water.

The total quantity of material taken out is 180 cubic yards of boulders and sand.

The "Twin" stone lifter was employed, between the 14th of May and the 18th of June, in removing a large number of the boulders which had been loosened in the bed of the river by the dredge St. Louis.

### PROVINCE OF ONTARIO.

#### DREDGING AT ADOLPHUSTOWN.

Aldolphustown, Lennox County, is on the Bay of Quinté, 18 miles south of Napanee. The dredge "Queen" worked from the 14th to the 30th of June, deepening the approach to the wharf (Allison's) on both sides, as well as enlarging the channel in front of the wharf. Two adjoining cuts 600 feet long by 50 feet wide, and having a depth of 9 feet at low water, were made and 3,870 cubic yards of hard clay removed.

#### DREDGING AT AMHERSTBURG.

Amherstburg is a port of entry, in the County of Essex, situated on the Detroit River, 5 miles above Lake Erie, and is a coaling station.

## Department of Public Works.

Between the 6th of October and the 30th of November, and the 6th and 8th of June, the dredge "Ontario" worked in the channel in front of the Cuddy Mullen Company's coal dock, four cuts of 500 in length, one of 375 feet, one of 300, and one of 225 feet being made.

On a shoal between the "Town" and "Fraser's" docks, two cuts of 225 feet, and one of 110 feet in length were made. These cuts were 25 feet wide, and 18 feet in depth.

At the entrance to the Cuddy Mullen Company's coal slip, in rear of their wharf, a cutting, 120 feet long and 35 feet wide, was made to a depth of 14 feet.

In the main channel, several short cuts were finished, and many boulders were loosened and removed with some lumps and ridges which had been left in the cuts.

Altogether, 6,015 cubic yards of very hard clay, stones, and boulders were taken out.

### DREDGING AT BOWMANVILLE.

The harbour of Bowmanville, or Port Darlington, county of Durham, is on the north shore of Lake Ontario, 40 miles east of Toronto.

The dredge "Queen" began work in this locality on the 19th of July, and continued dredging until the 4th of September, making one cut, 1,200 feet long by 25 feet wide, to a depth of 14 feet, from the outer end of the piers down into the harbour, which necessitated the removal of 14,400 cubic yards of sand.

The dredge "Nipissing" was also engaged during the fiscal year, between the 27th and 30th of June.

One cut 220 feet long, by 25 feet wide and 14 feet deep, was made in front of the elevators and coal sheds; 2,375 cubic yards of sand being removed. Total quantity of material removed by both dredges at Bowmanville during the fiscal year was 16,815 cubic yards.

### DREDGING AT BELLEVILLE.

Belleville, the shire town of the County of Hastings, is situated on the Bay of Quinté, at the mouth of the river Moira, and is 43 miles west of Kingston.

Between the 1st and 10th of June, the dredge "Queen" was engaged deepening along side the Grand Junction Railway dock. One cut 2,200 feet long and 10 feet deep was made to deep water; 2,550 cubic yards of hard-pan, sand and mud being removed.

### DREDGING AT COBOURG.

The town of Cobourg, Northumberland county, is on the north shore of Lake Ontario, 69 miles north-east of Toronto.

Continuing work from last fiscal year, the dredge "Nipissing" was employed in Cobourg harbour between the 2nd of July and the 28th of August.

One cut 289 feet long was made through a shoal, between the entrance piers, and five cuts in the harbour, respectively 350, 400, 465, 480 and 505 feet in length, all cuts being dredged to a width of 25 feet and a depth of 14 feet at low water.

24,300 cubic yards of hard-pan, sand and mud were taken out.

### DREDGING AT FRENCHMAN'S BAY.

Frenchman's Bay, or Pickering Harbour, Ontario county, is on Lake Ontario, 21 miles east of Toronto.

The dredge "Queen" operated in this locality between the 13th and the 27th October, making one cut 800 feet long and another 300 feet long in the channel leading from the wharf towards the piers, and to a depth of 10 feet at low water. 5,100 cubic yards of sand and mud were removed.



The dredge "Nipissing" was also employed between the 18th of October and the 12th of November.

A cut 1,225 feet long by 25 feet wide was made by the "Nipissing" to a depth of 11 feet at low water, from a point about 400 feet outside the mouth of piers, through the channel between the same towards the harbour, removing 8,250 cubic yards of sand. Total quantity of material removed by both dredges at Frenchman's Bay, during the fiscal year was 13,500 cubic yards.

#### DREDGING IN THE KAMINISTIGUIA RIVER.

This river empties into Thunder Bay, Lake Superior, to the westward of Port Arthur, in the electoral district of Algoma.

Dredge "No. 9" worked between the 12th of July and 26th of October and the 16th and 30th of June, continuing the deepening of the river to 20 feet below zero of gauge or low water.

Taking up the dredging where it was left off in 1896-97, near the Canadian Pacific Railway Elevator "B", work was continued up the river to a point above McKellar's Landing, for a distance of 2,449 feet; the width of channel dredged varying from 130 to 420 feet. The turning basin as well as the mouth of the McKellar River, which empties into the basin, was dredged and a shoal at the mouth of the Kaministiquia removed. A depth of twenty feet water was secured throughout, and 165,900 cubic yards of sand, clay, boulders and hard-pan taken out.

#### DREDGING AT KINGSTON.

Kingston, an important inland port of Eastern Ontario, and a favourite point of transshipment for western grain, etc., is situated at the outlet of Lake Ontario, and the western terminus of the Rideau Canal, 172 miles west of Montreal.

Elevator dredge "No. 8" was engaged in dredging in Kingston harbour between the 18th of May and the 30th of June.

In front of Richardson's elevator, a cutting 160 feet long by 300 feet wide to a depth of 18 feet, and at the northern end of the main channel, a cutting 375 feet long by 250 feet wide to a depth of 18 feet were made.

39,800 cubic yards of clay were removed at this place.

#### DREDGING AT MEAFORD.

Meaford is on the southern shore of the Georgian Bay, in the county of Grey, 19 miles north-east of Owen Sound.

The dredge "Challenge" worked in this locality between the 2nd and 14th July making two adjoining cuts in the channel between the piers which form the harbour. Each cut was 650 feet long by 48 feet wide and 15 feet in depth at low water; 3,420 cubic yards of sand and hard-pan were removed.

#### DREDGING AT MIDLAND.

Midland, Simcoe County, is the Georgian Bay terminus of the Grand Trunk Railway.

The dredge "Challenge" was employed between the 15th of July and the 8th of November, and from the 15th to the 30th of June, during which periods the following dredging was done:—

In front of Playfair's wharf, one cut 264 feet long, 22 feet wide, and 15 feet deep. In Theivs slip one cut 146 feet long, 25 feet wide, and 13 feet deep. One cut 138 feet long, across a shoal at the entrance to the harbour to 16 feet in depth; one cut 395 feet long at the outer end of the esplanade, having a depth of from 12 to 14 feet, and 16

## Department of Public Works.

adjoining cuts in connection with the new elevator, running parallel with the esplanade, of the respective lengths of 600, 447, 412, 406, 394, 386, 370, 357, 332, 306 270, 234, 156, 150, 427, each cut having a width of 24 feet and a depth of 20 feet. Two cuts each 480 feet by 50 feet by 20 feet in depth, were also made across the ends of the above cuts from the esplanade outwards to deep water. 44,500 cubic yards of hard-pan, sand, clay, mud and boulders, were removed during the fiscal year.

### DREDGING AT NEWCASTLE.

Newcastle, county of Durham, is situated on the north shore of Lake Ontario, 47 miles east of Toronto.

Between the 8th of September and the 10th of October, the dredge "Queen" was engaged in deepening the channel between the piers, making a cut 1,100 feet long, 25 feet wide, and a depth of 12 feet, which necessitated the removal of 10,890 cubic yards of sand and clay.

The dredge "Nipissing" was employed from the 9th to the 27th of June, making one cut 940 feet long, 25 feet wide and 14 feet deep at low water, alongside the eastern pier, past the same into the harbour and extending 40 feet beyond the mouth of piers into the lake, which entailed the removal of 8,650 cubic yards of sand and mud.

The total quantity of material taken out by both dredges was 19,540 cubic yards.

### DREDGING AT POINT EDWARD—(ST. CLAIR RIVER.)

Point Edward, in the county of Lambton, is situated at the head of the St. Clair River, about three miles of Sarnia, at the lower end of Lake Huron.

Early in July, the dredge "Arnoldi," belonging to Messrs. Allan & Fleming, was placed at work in front of the Grand Trunk Railway elevator, to remove a bar which prevented the vessels getting to the elevator to unload. Work was commenced on the 12th of July and completed on the 31st of the same month. The plant worked 180 hours with the object of securing a minimum depth of eighteen feet at low water, and removed 8,500 cubic yards of material.

### DREDGING AT PORT ARTHUR.

Port Arthur, Algoma district, Ontario, on the north shore of Lake Superior, is an important station on the Canadian Pacific Railway.

On the 2nd of July, 1897, dredge "No. 9" continuing its work from the previous fiscal year, was engaged here up to the 8th of the same month and between the 23rd of May and 14th of June, 1898.

A cutting 300 feet long and 100 feet wide was made on the south side of the Canadian Pacific Railway Company's wharf.

A corner of the turning point in the channel leading to the wharfs was taken off, and several lumps in the channel were removed; all the dredging was done to a depth of 18 feet.

A cutting 1,400 feet long by 200 feet wide and 20 feet deep, was made across a shoal extending from the main or central entrance to the harbour out into Thunder Bay.

The quantity of material taken out is 46,200 cubic yards of sand and clay.

### DREDGING AT PORT ELGIN.

Port Elgin is in the county of Bruce, on the Eastern shore of Lake Huron, about 24 miles north of the town of Kinkardine, and four miles south of Southampton. It is a station on the Wellington, Grey and Bruce division of the Grand Trunk railway. Population, 2,000.



Early in July, Messrs Porter and Bowman's dredge was put to work on the bar at the entrance to the harbour to enable vessels to enter.

The work was commenced on the 5th of July and completed on the 27th of August.

The plant worked 367 hours and removed 18,613 cubic yards of material.

A sum of money was voted by parliament at its session of 1897, for extending the breakwater, with a view of preventing the silting in of the harbour. Recent observations and soundings go to show however, that "groynes" run out from the shore would act as a preventive much better than an extension of the breakwater; the matter is still under consideration.

#### DREDGING AT PORT STANLEY.

The harbour of Port Stanley, is at the mouth of Kettle Creek, on the north shore of Lake Erie, 24 miles from London; it is formed by two piers extending into the lake, one on each side of the mouth of the creek.

The dredge "Ontario" was at work between the 2nd and 12th of July and the 29th and 30th of June.

In the harbour, a turning basin 115 feet in length, and 125 in width was dredged to a depth of 13 feet, and at the entrance to the harbour, a cut 175 feet wide, and 14 feet deep was made.

5,520 cubic yards of sand and gravel were removed.

#### DREDGING AT PRESCOTT.

The town of Prescott, Grenville County, is on the River St. Lawrence, 114 miles west of Montreal.

The town of Ogdensburg, state of New York, is immediately opposite Prescott.

The dredge "Queen" carrying on the operations commenced in the fiscal year 1896-97, was further engaged here between the 2nd and the 12th of July, in removing a shoal at the town dock to 14 feet in depth, which necessitated the displacement of 1,950 cubic yards of clay and hard-pan.

#### DREDGING AT SAUGEEN RIVER.

Saugeen River empties into Lake Huron at the village of Southampton, in the county of Bruce.

During the year the dredge "Hackett" belonging to Messrs Porter and Bowman was employed at \$8 per working hour, dredging over the bar at the entrance to the Saugeen River which is really the harbour of Southampton.

The plant worked from the 28th June to 7th July, and from 4th September to 29th October, in all 500 hours, and removed 11,500 cubic yards of very hard sand and many boulders.

In 1898, the same plant resumed work May 14th and continued up to close of fiscal year dredging for 386 hours.

#### DREDGING IN THE SOUTH NATION RIVER.

The South Nation River takes its rise in the township of Matilda, Dundas county, and after an irregular course of 100 miles enters the River Ottawa, at Plantagenet.

The dredge "Dundas" was employed in dredging this river between the 2nd of July and the 30th of October.

A cutting was made about  $2\frac{1}{2}$  miles in length, from Meddangh's Rapids to Barringar's Rapids, affording a depth of 7 feet of water.

The materials removed, which consist of clay, hardpan, gravel and boulders, were deposited on the river banks.

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### DREDGING IN THE SYDENHAM RIVER.

The Sydenham River flows through the county of Lambton for about 100 miles, and empties into Lake St. Clair, below Wallaceburg.

The dredge "Ontario" was kept at work on this river between the 28th of July and the 30th of September. In the east branch of the river, at Dresden, two cuts 1,050 feet long by 50 feet wide, and 10 feet deep were made through a shoal, and in the north branch of the river three cuts 1,050, 600 and 300 feet long respectively were made to a depth of 9 feet. A large number of snags and sunken logs as well as 15,540 cubic yards of gravel and clay were removed from the channel.

### DREDGING AT TEXAS LANDING.

Texas Landing, on the Detroit River, is about three miles below Amherstburg.

Between the 7th and 15th of June the dredge "Ontario" made three cuts 320, 280 and 60 feet long in the northern channel of approach to the wharf; each cut being 25 feet wide and 15 feet deep.

2,760 cubic yards of clay and boulders were taken out.

### DREDGING AT WHITBY.

Whitby, the chief town of Ontario county, is on the north shore of Lake Ontario, 29½ miles east of Toronto.

A sand shoal having formed at the mouth of the piers, and a large quantity of the same material having been carried down and deposited between the piers, the dredge "Nipissing" was put to work at Whitby on the 30th of August, and continued dredging until the 16th of October, 1897.

Two cuts 1,155 and 855 feet long and having each a width of 50 feet, were made to a depth of 14 feet at low water alongside the western pier and down into the harbour.

Two cuts, one of 100 and one of 320 feet in length, were also made to 14 feet depth from the end of the dredging performed in the harbour into a slip.

On the 7th and 8th of June this dredge worked on a small sand shoal alongside the eastern pier.

The total quantity of materials taken out is 25,763 cubic yards of sand, clay and mud.



DREDGING—QUEBEC AND ONTARIO.

CLASSIFICATION OF DISBURSEMENTS of Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "CHALLENGE."

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages. ....	405 28	420 00	420 00	420 00	316 25	30 00	30 00	30 00	30 00	...	...	146 49	2,248 02
Coal. ....	...	7 40	7 00	...	...	...	...	...	...	...	...	10 50	24 90
Wo d. ....	45 63	182 88	145 06	160 50	58 94	...	...	...	...	...	...	51 31	644 32
Provisions. ....	104 60	113 00	113 00	113 00	82 66	...	...	...	...	...	33 10	81 39	640 75
Stores. ....	...	0 50	6 25	2 00	2 60	...	...	...	...	6 35	51 73	43 50	112 93
Equipment. ....	7 50	...	...	3 00	1 49	...	...	...	27 27	6 20	26 88	28 29	100 63
Repairs. ....	14 59	5 18	20 14	10 01	1 30	...	320 53	...	33 18	150 81	512 97	854 16	1,923 27
Pilotage. ....	...	...	...	...	...	...	...	...	...	...	...	...	...
Towage. ....	...	...	...	...	55 00	...	...	...	95 00	...	17 70	267 46	438 51
Contingencies. ....	2 30	1 05	...	...	...	...	...	...	...	...	...	...	...
Totals. ....	580 30	730 01	711 45	708 51	518 24	30 00	350 53	30 00	185 45	163 36	642 38	1,483 10	6,133 33
Working expenses. ....	565 31	724 83	691 31	698 50	516 94	30 00	30 00	30 00	152 27	12 55	129 41	628 94	4,210 06
Repairs, ordinary. ....	14 99	5 18	20 14	10 01	1 30	...	320 53	...	33 18	150 81	432 97	227 36	895 94
" extraordinary. ....	...	...	...	...	...	...	...	...	...	...	80 00	626 80	1,027 33
Totals. ....	580 30	730 01	711 45	708 51	518 24	30 00	350 53	30 00	185 45	163 36	642 38	1,483 10	6,133 33

Department of Public Works.

DREDGING—QUEBEC AND ONTARIO—Continued.  
CLASSIFICATION OF DISBURSEMENTS of Dredges operated by the Public Works Department, &c.—Continued.  
DREDGE "ONTARIO."

Items	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	395 00	395 00	395 00	395 00	398 00	116 19	30 00	30 00	30 00			414 00	2,598 19
Coal.....	108 50	147 51	170 00	230 95	100 00							189 39	946 35
Wood.....	103 00	103 00	103 00	103 00	103 00	19 35					75 97	103 00	713 32
Provisions.....		2 95		7 88	10 10	3 25			31 65	14 40	51 83	40 70	116 71
Stores.....	14 00				2 46				186 11	372 76	1,134 38	6 65	69 16
Equipment.....	49 50	13 12			25 74	6 00						809 87	2,597 48
Repairs.....													
Pilotage.....													
Towage.....	8 42			119 47		34 69					40 00	9 16	211 74
Contingencies.....													
Totals.....	678 42	661 58	668 00	856 30	639 30	179 48	30 00	30 00	247 76	387 16	1,302 18	1,572 77	7,252 95
Working expenses.....	628 92	648 46	668 00	856 30	613 56	173 48	30 00	30 00	61 65	14 40	167 80	762 90	4,655 47
Repairs, ordinary.....	49 50	13 12			25 74	6 00			186 11	372 76	956 38	117 36	1,726 97
" extraordinary.....											178 00	692 51	870 51
Totals.....	678 42	661 58	668 00	856 30	639 30	179 48	30 00	30 00	247 76	387 16	1,302 18	1,572 77	7,252 95



DREDGING—QUEBEC AND ONTARIO—Continued.  
CLASSIFICATION OF DISBURSEMENTS of Dredges operated by the Public Works Department, &c.—Continued.  
DREDGE “NIPISSING.”

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	395 00	395 00	395 00	395 00	268 56	30 00	30 00	30 00	30 50	30 00		395 00	2,394 06
Coal.....	117 98	203 78	260 61	134 94	56 90							204 43	978 64
Wood.....													
Provisions.....	108 10	103 00	103 00	103 00	68 67								
Stores.....		9 36		4 50							35 13	103 00	623 90
Equipment.....			5 50	3 75							51 83	46 46	112 15
Repairs.....	36 40	56 44	86 68	25 11					36 50	8 10		4 85	58 70
Pilotage.....									36 00	20 50	488 60	198 54	948 27
Towage.....													
Contingencies.....	2 12		19 90		62 45						48 80	0 92	134 19
Totals.....	659 60	767 58	870 69	666 30	456 58	30 00	30 00	30 00	103 00	58 60	624 36	953 20	5,249 91
Working expenses.....	623 20	711 14	784 01	641 19	456 58	30 00	30 00	30 00	67 00	38 10	135 76	754 66	4,301 64
Repairs, ordinary.....	36 40	56 44	86 68	25 11					36 00	20 50	488 60	198 54	948 27
" extraordinary.....													
Totals.....	659 60	767 58	870 69	666 30	456 58	30 00	30 00	30 00	103 00	58 60	624 36	953 20	5,249 91

Department of Public Works

DREDGING—QUEBEC AND ONTARIO—Continued.  
CLASSIFICATION OF DISBURSEMENTS of the Dredges operated by the Public Works Department, &c.—Continued.  
DREDGE “QUEEN.”

Items.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		Grand Totals.	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
Wages.....	385	39	395	00	395	00	395	00	91	59	30	00	30	00	30	00	30	00	91	90	70	29	402	50	2,184	48
Coal.....	137	93	257	13	82	49	120	04	168	00	120	04	120	04	120	04	120	04	91	90	70	29	110	38	1,038	16
Wood.....	111	85	113	00	119	00	114	20	20	59	114	20	114	20	114	20	114	20	113	00	40	18	113	00	631	82
Provisions.....	3	30			2	70	4	95	1	10	4	95	4	95	4	95	4	95	4	00	51	83	39	00	102	88
Stores.....	28	44	22	82	39	30	29	09	1	00	29	09	29	09	29	09	29	09	4	00	12	85	152	98	39	78
Equipment.....	10	00																	540	93	936	71	152	98	1,860	37
Repairs.....	12	25	7	55	1	25	9	00	24	20									22	39	19	91	4	17	100	72
Pilotage.....																										
Towage.....																										
Contingencies.....																										
Totals.....	689	16	795	50	639	74	672	28	306	48	30	00	30	00	30	00	162	03	659	22	1,131	77	822	03	5,968	21
Working expenses.....	660	72	772	68	600	44	643	19	305	48	30	00	30	00	30	00	52	93	118	29	195	06	669	05	4,107	84
Repairs, ordinary.....	28	44	22	82	39	30	29	09	1	00							109	10	540	93	636	71	152	98	1,560	37
" extraordinary.....																					300	00			300	00
Totals.....	689	16	795	50	639	74	672	28	306	48	30	00	30	00	30	00	162	03	659	22	1,131	77	822	03	5,968	21



DREDGING—QUEBEC AND ONTARIO—Continued.

CLASSIFICATION OF DISBURSEMENTS of Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "ST. LOUIS."

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages. ....	343 55	340 00	340 00	339 20	101 35	6 65					130 96	355 00	1,956 71
Coal. ....	80 00	85 00	76 00	90 76	41 00								366 76
Wood. ....													
Provisions. ....	102 50	102 50	105 50	102 50	26 67						67 62	103 10	610 39
Stores. ....			0 72								51 83		52 55
Equipment. ....											9 67		11 17
Repairs. ....	21 88	156 52	7 94	20 77	373 10		200 00		122 64		230 32	1 50	1,133 17
Pilotage. ....													
Towage. ....				6 25	25 00				5 31				25 00
Contingencies. ....					22 73						15 00	18 29	67 58
Totals. ....	547 93	684 02	524 16	559 48	589 85	6 65	200 00		127 95		505 40	477 89	4,223 33
Working expenses. ....	526 05	527 50	516 22	538 71	216 75	6 65			5 31		275 08	477 89	3,096 16
Repairs, ordinary. ....	21 88		7 94	20 77	13 10				122 64		230 32		416 65
" extraordinary. ....		156 52			360 00		200 00						716 52
Totals. ....	547 93	684 02	524 16	559 48	589 85	6 65	200 00		127 95		505 40	477 89	4,223 33

DREDGING—QUEBEC AND ONTARIO—Continued.

CLASSIFICATION OF DISBURSEMENTS OF Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "No. 9."

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	669 44	724 20	696 27	619 62	172 00	40 00	41 50	40 00	90 00	14 00	1,043 90	739 61	4,890 54
Coal.....					9 00				22 50			3,102 58	3,134 08
Wood.....													
Provisions.....	218 67	269 00	249 00	203 96	36 00						91 36	209 00	1,276 99
Stores.....		7 27	9 65	12 85	6 68		44 69				64 15	43 88	163 22
Equipment..		5 45	2 20			2 05					40 88	39 37	91 03
Repairs.....	11 60	60 11	4 20	25 10	392 35	3 13		760 39	484 83	592 24	325 00	174 11	2,829 93
Pilotage.....													
Towage.....	1 95			3 37	831 73					40 95			987 23
Contingencies.....													
Totals. ....	901 66	1,066 03	961 32	864 90	1,447 76	45 18	86 19	800 39	597 33	647 19	1,565 29	4,389 78	13,373 02
Working expenses....	890 06	1,005 92	957 12	839 80	1,055 41	45 18	86 19	40 00	112 50	54 95	1,240 29	4,215 67	10,543 09
Repairs, ordinary...	11 60	60 11	4 20	25 10	25 51			760 39	484 83	592 24	325 00	174 11	2,465 09
" extraordinary					366 84								366 84
Totals.....	901 66	1,066 03	961 32	864 90	1,447 76	45 18	86 19	800 39	597 33	647 19	1,565 29	4,389 78	13,373 02



DREDGING, QUEBEC AND ONTARIO—Continued.  
CLASSIFICATION OF DISBURSEMENTS OF Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "NITHSDALE."

Items.	July.		August.		September.		October.		November.		December.		January.		February.		March.		April.		May.		June.		Grand Totals.
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	
Wages.....	163	39	357	00	357	00	122	50													330	95	422	00	1,752 84
Coal.....	80	00	110	00	106	10	47	03													200	00			543 13
Wood.....					5	00																			5 00
Provisions.....	49	35	110	00	119	00	37	10													104	20	180	00	599 65
Stores.....							12	84																	12 84
Equipment.....	79	98			1	00	7	50																	88 48
Repairs.....					101	28																			108 43
Pilotage.....																									
Towage.....																									
Contingencies.....			3	00	2,628	00	388	57																	
Totals.....	372	72	580	00	3,317	38	615	54													635	15	2,747	90	8,268 69
Working expenses.....	372	72	580	00	3,216	10	615	54													635	15	2,740	75	8,160 26
Repairs, ordinary.....					101	28																	7	15	108 43
" extraordinary.....																									
Totals.....	372	72	580	00	3,317	38	615	54													635	15	2,747	90	8,268 69

Department of Public Works.

DREDGING—QUEBEC AND ONTARIO—Continued.  
CLASSIFICATION OF DISBURSEMENTS of Dredges operated by the Public Works Department during the Year ended 30th June, 1898.  
DREDGE NO. 1, DEPARTMENT, RAILWAYS AND CANALS.

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	360 00	376 87	358 00	360 00	322 68					132 30	360 00	360 00	2,629 85
Coal.....	65 00	58 00	79 55	60 00	31 50							76 19	370 24
Wood.....													
Provisions.....	102 15	105 00	99 00	100 00	89 32					6 67	100 00	100 00	702 14
Stores.....													
Equipment ..													
Repairs.....	29 28	168 00	32 72	1 20	220 22		322 02		211 27		1 27		1 27
Pilotage.....	22 00			10 00	7 00						12 69		1,007 01
Towage.....	12 00		30 00										39 00
Contingencies ..		13 50											42 00
													13 50
Totals.....	590 43	721 37	599 27	531 20	670 72		322 02		211 27	138 97	473 96	545 80	4,805 01
Working expenses.....	561 15	553 37	566 55	530 00	450 50					138 97	461 27	536 19	3,798 00
Repairs, ordinary .....	29 28		32 72	1 20	25 05		322 02		211 27		12 69	9 61	643 84
" extraordinary .....		168 00			195 17								363 17
Totals.....	590 43	721 37	599 27	531 20	670 72		322 02		211 27	138 97	473 96	545 80	4,805 01



DREDGING—QUEBEC AND ONTARIO—Continued.  
CLASSIFICATION OF DISBURSEMENTS OF Dredges operated by the Public Works Department during the Year ended 30th June, 1898.  
DREDGE "No. 8."

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....											490 80	595 43	1,086 23
Coal.....											459 38	762 71	1,222 09
Wood.....											134 43	196 12	330 55
Provisions.....											8 30	63 11	71 41
Stores.....											9 55	28 50	38 05
Equipment.....											7 25	1,629 00	1,636 25
Repairs.....													
Pilotage.....													
Towage.....												25 00	25 00
Contingencies.....											3 50	25 19	28 69
Totals.....											1,113 21	3,325 06	4,438 27
Working expenses.....											1,105 96	1,696 06	2,802 02
Repairs, ordinary.....											7 25	429 00	436 25
" extraordinary.....												1,200 00	1,200 00
Totals.....											1,113 21	3,325 06	4,438 27

Department of Public Works.

DREDGING—QUEBEC AND ONTARIO—Continued.  
CLASSIFICATION AND QUANTITIES of Material removed by Dredges operated by the Public Works Department during the Year ended  
30th June, 1898.  
DREDGE "CHALLENGE."

Description of Material dredged.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.
Hard-pan.....	840	200	2,030	1,140									4,210
Boulders.....			250	100									350
Gravel.....													
Clay.....	960	14,230	4,020	9,000	2,820							6,900	37,930
Clay and stone.....													
Sand, ordinary.....	4,350		360										4,710
Sand, very fine.....													
Mud.....	300	420											720
Totals.....	6,450	14,850	6,660	10,240	2,820							6,900	47,920



DREDGING—QUEBEC AND ONTARIO—Continued.  
CLASSIFICATION AND QUANTITIES OF Materials removed by Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "ONTARIO."

Description of material dredged.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.
Hard-pan.....				1,260									1,260
Boulders.....				380	120							60	560
Gravel.....	120	1,480	400										2,000
Clay.....	1,420	5,000	7,700	1,590	1,800							3,040	20,550
Clay and stone.....					525								525
Sand, ordinary.....	4,820											120	4,940
" very fine.....													
Mud.....													
Totals.....	6,360	6,480	8,100	3,230	2,445							3,220	29,835

DREDGE "NIPISSING."

	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.
Hard-pan.....	4,300	3,600											7,900
Boulders.....													
Gravel.....													
Clay.....		500	13,350										13,850
Clay and stone.....													
Sand, ordinary.....	7,475	5,625	3,450	11,063	3,375							10,350	41,338
" very fine.....													
Mud.....		3,700	1,500									1,050	6,250
Totals.....	11,775	13,425	18,300	11,063	3,375							11,400	69,338

Department of Public Works

DREDGING—QUEBEC AND ONTARIO—Continued.

CLASSIFICATION AND QUANTITIES OF Material removed by Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "QUEEN."

Description of material dredged.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.
Hard-pan .....	60											240	300
Boulders .....													
Gravel .....	1,890			1,400									
Clay .....													
Clay and stone .....	2,430	10,530	8,490	6,700								3,870	7,160
Sand, ordinary .....												660	28,810
" very fine .....				840								1,650	2,490
Mud .....													
Totals .....	4,380	10,530	8,490	8,940								6,420	38,760

DREDGE "ST. LOUIS."

Hard-pan .....												5	135	140
Boulders .....														
Gravel .....													440	440
Clay .....														
Clay and stone .....														
Sand, ordinary .....	4,845	4,845	3,540	5,160	540							40	800	19,770
" very fine .....														
Mud .....														
Totals .....	4,845	4,845	3,540	5,160	540							45	1,375	20,350



DREDGING—QUEBEC AND ONTARIO—Continued.

CLASSIFICATION AND QUANTITIES of Material removed by Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "No. 9."

Description of Material dredged.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.
Hard-pan.....		6,150											6,150
Boulders.....		2,100	750										2,850
Gravel.....				13,550							4,300	10,600	88,600
Clay.....	13,950	27,400	18,800										
Clay and stone.....			26,650								5,450	30,500	114,500
Sand, ordinary.....	21,300	20,600		10,000									
" very fine.....													
Mud.....													
Totals.....	35,250	56,250	46,200	23,550							9,750	41,100	212,100

DREDGE "NITHSDALE."

Hard-pan.....	175	190	240	50							255		910
Boulders.....													
Gravel.....	4,200	11,500	9,280	3,240							8,110	10,465	46,795
Clay.....													
Clay and stone.....													
Sand, ordinary.....													
" very fine.....													
Mud.....													
Totals.....	4,375	11,690	9,520	3,290							8,365	10,465	17,705

Department of Public Works

DREDGING—QUEBEC AND ONTARIO—Continued.

CLASSIFICATION AND QUANTITIES of Material removed by Dredges operated by the Public Works Department during the Year ended 30th June, 1898.

DREDGE "No. 1." (Railways and Canals.)

Description of Material Dredged.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.	c. yds.
Hard-pan .....													
Boulders .....	40	50	60	30								920	920
Gravel .....											60	130	370
Clay .....	800	100		4,560	3,960						4,680	2,030	16,130
" and stone .....													
Sand, ordinary .....	1,580	3,135	4,040										
" very fine .....													
Mud .....													8,755
Totals .....	2,420	3,285	4,100	4,590	3,960						4,740	3,080	26,175

DREDGE "No. 8."

Hard-pan .....													
Boulders .....													
Gravel .....												32,140	39,800
Clay .....											7,660		
" and stone .....													
Sand, ordinary .....													
" very fine .....													
Mud .....													
Totals .....											7,660	32,140	39,800



DREDGING, QUEBEC AND ONTARIO, FISCAL YEAR 1897-98—Continued.

STATEMENT showing the material removed at the different localities, by dredges operated by the Department of Public Works, the total amount of expenditure on each dredge, and the average cost per cubic yard.

DREDGE "CHALLENGE."

Location.	Hard-pan.	Boulders.	Gravel.	Clay.	Clay and Stone.	Sand ordinary.	Sand fine.	Mud.	Total Cubic Yards.
	c.y.	c.y.	c.y.	c.y.	c.y.	c.y.	c.y.	c.y.	c.y.
Meaford.....	300	.....	.....	.....	.....	3,120	.....	.....	3,420
Midland.....	3,910	350	.....	37,930	.....	1,590	.....	720	44,500
	4,210	350	.....	37,930	.....	4,710	.....	720	47,920

Total amount of expenditure, \$6,133.33. Cost per cubic yard, 12½ cts.

DREDGE "ONTARIO."

Port Stanley.....	.....	.....	120	460	.....	4,940	.....	.....	5,520
Sydenham River.....	.....	.....	1,880	13,660	.....	.....	.....	.....	15,540
Amherstburg.....	1,260	500	.....	3,730	525	.....	.....	.....	60,15
Texas Landing.....	.....	60	.....	2,700	.....	.....	.....	.....	2,760
	1,260	560	2,000	20,550	525	4,940	.....	.....	29,835

Total amount of expenditure, \$7,252.95. Cost per cubic yard, 24.31 cts.

DREDGE "NIPISSING."

Cobourg.....	7,900	.....	.....	.....	.....	12,700	.....	3,700	24,300
Whitby.....	.....	.....	.....	13,850	.....	10,413	.....	1,500	25,763
Frenchman's Bay.....	.....	.....	.....	.....	.....	8,250	.....	.....	8,250
Newcastle.....	.....	.....	.....	.....	.....	7,600	.....	1,050	8,650
Bowmanville.....	.....	.....	.....	.....	.....	2,375	.....	.....	2,375
	7,900	.....	.....	13,850	.....	41,338	.....	6,250	69,338

Total amount of expenditure, \$5,249.91. Cost per cubic yard, 7.571 cts.

DREDGE "QUEEN."

Prescott.....	60	.....	.....	1,890	.....	.....	.....	.....	1,950
Bowmanville.....	.....	.....	.....	.....	.....	14,400	.....	.....	14,400
Newcastle.....	.....	.....	.....	1,400	.....	9,490	.....	.....	10,890
Frenchman's Bay.....	.....	.....	.....	.....	.....	4,260	.....	840	5,100
Belleville.....	240	.....	.....	.....	.....	660	.....	1,650	2,550
Adolphustown.....	.....	.....	.....	3,870	.....	.....	.....	.....	3,870
	300	.....	.....	7,160	.....	28,810	.....	2,490	38,760

Total amount of expenditure, \$5,968.21. Cost per cubic yard, 15⅔ cts.

DREDGE "NITHSDALE."—(Rented.)

St. Jean des Chaillons.....	.....	910	.....	46,795	.....	.....	.....	.....	47,705
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Total amount of expenditure, \$8,268.69. Cost per cubic yard, 17¼c.

Department of Public Works

DREDGE "ST. LOUIS."

Location.	Hard pan.	Boulders.	Gravel.	Clay.	Clay and Stone.	Sand ordinary.	Sand fine.	Mud.	Total Cubic Yards.
	c. y.	c. y.	c. y.	c. y.	c. y.	c. y.	c. y.	c. y.	c. y.
River St. François.....	.....	.....	.....	440	.....	19,730	.....	.....	20,170
St. Michel.....	.....	140	.....	.....	.....	40	.....	.....	180
	.....	140	.....	440	.....	19,770	.....	.....	20,350

Total amount of expenditure, \$4,223.33. Cost per cubic yard, 20 $\frac{3}{4}$ c.

DREDGE "No. 9."

Port Arthur.....	.....	.....	.....	15,300	.....	30,900	.....	.....	46,200
Kaministiquia River..	6,150	2,850	.....	73,300	.....	83,600	.....	.....	165,900
	6,150	2,850	.....	88,600	.....	114,500	.....	.....	212,100

Total amount of expenditure, \$13,373.02. Cost per cubic yard, 6·305c.

DREDGE "No. 1." (Department Railways and Canals.)

Richelieu River. ....	.....	180	.....	990	.....	.....	8,755	.....	9,925
Isle Gros Bois.....	.....	.....	.....	8,930	.....	.....	.....	.....	8,930
Pointe aux Tembles...	920	190	.....	6,210	.....	.....	.....	.....	7,320
	920	370	.....	16,130	.....	.....	8,755	.....	26,175

Total amount of expenditure, \$4,805.00. Cost per cubic yard, 18·357c.

DREDGE "No. 8."

Kingston.....	.....	.....	.....	39,800	.....	.....	.....	.....	39,800
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Total amount of expenditure, \$4,438.27. Cost per cubic yard, 11·15c.

DREDGES "Nos. 4, 5 and 6." (Contractors.)

Coteau Landing.....	.....	600	.....	37,625	.....	24,575	.....	.....	62,800
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Total amount of expenditure, \$8,157.00. Cost per cubic yard, 13c.

DREDGE "LITTLE GIANT." (Contractors.)

Chateauguay.....	1,770	750	.....	11,770	.....	25,550	3,750	.....	43,590
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Total amount of expenditure, \$9,888.00. Cost per cubic yard, 22 $\frac{7}{10}$ c.

DREDGE "T. F. M. No. 1." (Contractors.)

Laprairie.....	200	.....	.....	1,975	6,675	.....	.....	.....	8,850
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Total amount of expenditure, \$2,614.00. Cost per cubic yard, 29·54c.



## PROVINCE OF MANITOBA.

## DREDGING AT THE MOUTH OF THE RED RIVER, LAKE WINNIPEG.

*(See accompanying illustration W.)*

The opening of a channel through the bar at the mouth of the Red River, Lake Winnipeg, in order to give uninterrupted navigation to lake boats and to accelerate the development of the industries connected with the lake, began in 1884, and the work of dredging has been carried on each succeeding year since.

The plan which accompanies this report, entitled "general plan showing part of Lake Winnipeg and Red River in connection with improvements for navigation purposes"—gives accurately the relative positions of the city of Winnipeg, St. Andrew's Rapids, Selkirk, West Slough at mouth of Red River, Gimli Harbour and Hnausa—all places where works for the benefit of navigation have already been undertaken or are projected by the department.

The Red River passes into three outlets about three miles from the lake shore, which are designated: the west, centre and east channels. It is at the mouth of the east channel that the dredge "Winnipeg" has worked since 1893.

Previous to 1893, dredging operations were prosecuted at the mouth of the west channel.

The transfer of operations from the west to the east channel was occasioned by the flood and heavy ice flow of 1893, which caused the one channel to fill in, while very effectually scouring out the other.

The work done in the west channel, however, cannot in any sense be considered as thrown away, for uninterrupted navigation was maintained there; while previous to 1893, the extent of the bar opposite the east channel (now used) would have required at least three seasons' work to give a passage through it.

Up to the present it has been found impossible to do more than keep the channel in sufficiently good shape to meet the requirements of the lake traffic; and there was no good opportunity of working on a definite scheme for straightening and improving this channel.

At the beginning of the fiscal year 1897-98, dredging operations proceeded very satisfactorily at the mouth of the Red River during the whole of the month of July and the first half of August, 1897. Unfortunately during the terrific west-north-west gale blowing across the entrance channel, when the tug "Sir Hector" found it impossible to keep the dredge "Winnipeg" off the sand bar, this dredge had to be swamped there, where she sank in seven feet depth on a level keel.

The gale lasted three days; but it took three days more for the waters to subside—when the dredge was again raised by pumping, &c. As the vessel was embedded in sand and had one foot of sand inside much difficulty was experienced in raising it even after the pumping was done.

The tug also suffered some slight damage, and leaked badly which rendered it necessary to haul the boat out for repairs. The repairs required were, however, found to be light, and as soon as completed, the boat was again launched without much time being lost.

The scows sustained considerable damage; being badly battered they had to be hauled out to be repaired in the spring with the dredge and the coal barge.

## Department of Public Works

Repairs to hulls and machinery and general fitting out for work during the open season of 1898, began in March and on the 1st June the whole plant was ready to proceed to the mouth of Red River, excepting the anchors which having arrived only on the 9th June delayed the departure of the dredge until the 14th of the same month.

An examination of the channel made in May, showed that it had held very well, and that the depth of water in it was no where less than eight feet.

The "Winnipeg" began dredging at the mouth of Red River on the 21st June, but had to stop work again on the 23rd June, owing to the cylinder of the tug being wrecked, an unfortunate occurrence which was purely accidental; the engineer being entirely blameless. Under the circumstances the ordering of a new cylinder from Norman & Evans (Pound Manufacturing Company) of Lockport, N.Y., became compulsory; this firm being in possession of the patterns, &c.

The statements at pages 166 and 167 and entitled "classifications of disbursements" and "materials removed," show that in 1897-98: the total expenditure amounted to \$10,603.90, and the total quantity of material removed to 41,940 cubic yards, which gives an average cost of  $25\frac{1}{4}$  cents per cubic yard.

The lake trade has increased in lumber piles and cordwood; but not in fish.



DREDGING—MANITOBA.

CLASSIFICATION OF DISBURSEMENTS of the Dredge "Winnipeg" and Tug "Sir Hector" during the Year ended 30th June, 1898.

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	627 50	625 00	648 50	196 70	215 50	80 00	80 00	80 00	262 50	487 00	642 00	625 00	4,569 70
Coal.....	1,072 00	134 00	268 00								671 68		2,145 68
Wood.....		84 07	43 41										127 48
Provisions.....	168 75	190 66	106 04								184 03	163 80	813 28
Stores.....		60 30			11 65				15 96		36 93	37 10	161 94
Equipment.....											22 00	613 24	635 24
Repairs.....	83 75	109 63	198 11		74 15	182 40			81 75	187 04	623 18	173 00	1,713 06
Pilotage.....													
Towage.....		155 00										55 00	210 00
Contingencies ..	30 95	24 07	76 45	8 00	1 50						36 19	50 36	227 52
Totals.....	1,982 95	1,382 78	1,340 51	204 70	302 80	262 40	80 00	80 00	360 21	674 04	2,216 01	1,717 50	10,603 90
Working expenses ..	1,899 20	1,273 10	1,142 40	204 70	228 65	80 00	80 00	80 00	278 46	487 00	1,592 83	1,544 50	8,890 84
Repairs, ordinary.....	83 75	109 68	198 11		74 15	182 40			81 75	187 04	212 14	173 00	1,302 02
" extraordinary.....											411 04		411 04
Totals.....	1,982 95	1,382 78	1,340 51	204 70	302 80	262 40	80 00	80 00	360 21	674 04	2,216 01	1,717 50	10,603 90

Department of Public Works

DREDGING, MANITOBA, FISCAL YEAR 1897-98—Continued.

STATEMENT showing the material removed at different localities by dredges operated by the Public Works Department, the total annual expenditure on each dredge, and the average cost per cubic yard, for the fiscal year, 1897-98.

DREDGE "WINNIPEG" AND TUG "SIR HECTOR."

Localities.	Hard pan.	Boulders.	Gravel.	Clay.	Clay and stone.	Sand, ordinary.	Sand and clay.	Mud.	Totals.
	c. y.	c. y.	c. y.	c. y.	c. y.	c. y.	c. y.	c. y.	c. y.
Lake Winnipeg, dredging channel at mouth of Red River.....	...	.....	.....	.....	.....	.....	41,940	.....	41,940
Totals.....	.....	.....	.....	.....	.....	.....	41,940	.....	41,940

Total expenditure during Fiscal Year 1897-98, \$10,603.90. Average cost per cubic yard, 25½ cts.

PROVINCE OF BRITISH COLUMBIA.

DREDGING, NANAIMO HARBOUR.

The harbour of Nanaimo, on the east coast of Vancouver Island and Straits of Georgia, is a very important one, on account of the extensive collieries worked in its vicinity; coal is shipped from here in large quantities to all points on the Pacific coast.

This harbour may be considered to be land locked. The entrance opening towards the east, is protected from heavy seas and winds from that direction by Sharp Point on Vancouver Island and Gabriola Island. To the north, Newcastle and Protection Islands guard it from seas caused by north and north-east gales, the direction of the longest reaches.

From the north end of the harbour a narrow passage between Vancouver and Newcastle Islands, leads to Departure Bay, 4½ miles distant, where there are several colliery wharfs, but it is only navigable by small craft. The entrance to Departure Bay for ships is by the north end of Newcastle island.

The Nanaimo River empties into the harbour from the south over extensive mud flats lying between the New Vancouver Coal company's wharfs and Sharp Point. These mud flats would no doubt encroach to a much greater extent than at present upon the harbour, were it not for the scouring effect of the ebb and flow of the tide, which with varying velocity races along their outer edge.

The south channel or passage is the entrance of the harbour leading to the loading docks of the New Vancouver Coal Mining and Land company, Limited, the largest producers and exporters of coal in the Pacific province. The workings of this company extend in all directions at depths of from 800 to 1,000 feet under Nanaimo harbour towards Protection Island, and under the Mud Flats towards Sharp Point. The mines from the new shaft sunk lately at Gallows Point, Protection Island, are advancing to meet the workings from the Esplanade shaft situated south of the company's wharfs. The annual output of coal of this company, for foreign as well as domestic use, is placed at 500,000 tons, the market value of which approximates \$2,000,000.

The south channel or passage has been much contracted since 1862 by silt carried down into it by freshets on the Nanaimo and Chase Rivers. Sailing vessels in ballast arriving to load at the company's wharfs enter by the north channel and anchor to the north and west of the Middle Bank to wait their turn to unload at the ballast wharf and then load at the coal shoots. When loaded they are towed to sea by way of the south channel.



If there happen to be no room at the shoots, sailing vessels have to make way for steamships arriving for coal, by hauling off to the ground lying abreast of the wharfs between the site of the Nichol Rock and the spar buoy at the southern extremity of the Middle Bank, where they are exposed to dangerous winds blowing from across the Mud Flats and from the opposite direction down the passage leading to Departure Bay.

A great number of the vessels, both steam and sail which enter the harbour of Nanaimo are of large tonnage, drawing from 20 to 30 feet when loaded. These vessels incur great risk of grounding, especially a sailing ship in tow of a tug, when leaving the company's wharfs and because of the shoal water lying immediately to the east of the wharfs. Coasting steamers of light draught on arriving at and departing from the city wharfs find no little difficulty and danger in "Beacon" and "Carpenter" Rocks, which lie north of the wharfs about 700 feet from the shore.

The works which should be undertaken in addition to what has already been effected in connection with the lowering of the "Nichol Rock" to 16 feet depth mean low water, spring tides, at a cost of about \$44,000, are:—

1st.—The improvements required to afford safe navigation to deep draught sea going vessels calling at the New Vancouver Coal company's wharfs.

2nd.—Such additional dredging as may be found necessary to ensure the safety of coasting craft calling at the city wharfs.

As before stated, vessels arriving for coal in ballast enter the harbour by the south channel, come to anchor and gradually make their way up to the coal shoots. This can be done by the exercise of ordinary care without much danger of grounding or striking, now that the depth over "Nichol Rock" is 16 feet at mean low water, spring tides. Of course Middle Bank is a possible danger, but its removal is out of the question at the present time, owing to its great extent.

The improvements which should first be carried out are therefore limited to those found to be necessary in the immediate vicinity of the wharfs, and thence seawards by the south passage towards the entrance to the harbour. It is found that on account of the close proximity of the rock to the surface of the bottom along the front of the wharfs—it crops up at a depth of 26 feet below mean low water springs—the depth of 30 feet cannot be obtained in that locality except at great cost. The improvements to be proceeded with should therefore be confined for the present to securing by dredging the minimum depth of 26 feet along the wharf front and the greater depth of 28 to 30 feet at mean low water spring tides, over the area of the south channel lying east of the wharfs.

During the last fiscal year ended 30th June, 1898, dredging operations were carried on in Nanaimo Harbour from 1st July, 1897, to 18th January, 1898.

The work was confined to the dredging of the south channel, from the new Vancouver Coal Company's wharf towards the entrance to the harbour, to a depth of 30 feet at low water. This dredging was done by the dredge "Mud Lark," with attending tug "Princess" and scows.

The following table classifies in a concise form the particulars of the manner in which the time, in hours, has been consumed in dredging, repairing, moving, &c., as well as the quantity of material dredged and fuel used:—

Hours working.....	1,740
Hours dredging.....	707½
“ repairs and stormy weather.....	691½
“ moving, &c.....	20
“ coaling, &c.....	83
“ dismantling before moving.....	48
“ sundries, such as watering, cleaning, preparing dredge night and morning....	190
Total .....	1,740
Number of scows of material moved.....	356⅓
Number of cubic yards dredged.....	48,105
Pounds of coal consumed.....	538,305

## Department of Public Works.

It will be noticed that repairs to the plant occupied a good deal of the time mentioned above. From the 20th of July to the 4th of September, 1897, the crew of the dredge "Mud Lark" was employed in giving the entire plant a thorough overhauling. The dredge tug "Princess" and scows were beached and many repairs and renewals made both to the hulls and machinery.

The cost of these repairs was \$3,508.37, including \$876.33 for ordinary repairs.

The details of expenditure for running expenses for the fiscal year are as follows:—

Wages.....	\$ 3,506 99
Provisions .....	829 75
Material.....	1,076 45
Coal.....	512 13
Water.....	35 65
Contingencies.....	16 80
 Total.....	 \$ 5,977 77

### DREDGING, VANCOUVER HARBOUR.

The city of Vancouver, New Westminster district, is built on the southern side of Burrard Inlet, fifteen miles north of the mouth of the Fraser River. The principal part of the city stands on a peninsula, bounded on the north by the waters of Burrard Inlet, on the south by a small indentation of the sea shore called False Creek, and on the west by English Bay.

Burrard Inlet is always safely navigable for the deepest draught vessels and constitutes a fine harbour.

The passage at the narrows or mouth of the inlet is about a half mile wide: opposite the city front, the inlet is more than two miles wide, with a depth varying from 6 to 20 fathoms, and it extends about twenty miles farther inland. On the west and south sides of the harbour, English Bay and False Creek also afford accommodation for shipping.

On the 25th of January, 1898, the dredge "Mud Lark" and attending tug "Princess" and scows, which had ceased operations in Nanaimo Harbour on the 18th of the same month, was moved to Vancouver. After fitting up the dredge which had to be dismantled before being towed across the gulf, dredging operations were commenced on the 3rd of February at the Union Steamship Company's wharf and continued until the 8th of February. 1,395 cubic yards of material were excavated and the water deepened to solid rock, giving depths of from 12 to 24 feet. On the 9th of February the dredge was moved to Messrs Evans, Coleman & Evans wharf and dredging operations were continued for a period of 56½ days. The total amount of material excavated was 7,605 cubic yards. The depth given there was from 18 to 30 feet. Greater depth and more uniformity could not be obtained on account of the rocky nature of the bottom. The dredge was then moved to the Hastings Mills wharf and dredged there for a period of 36 days.

The total amount dredged at that point was 4,950 cubic yards.

Total cost of work at this harbour during the fiscal year was \$3,270.68.

**N.B.**—Most of the records relative to the dredging operations carried on in British Columbia during the fiscal year were lost during the conflagration which destroyed the offices of the resident engineer at New Westminster on the 11th September, 1898, hence the reason for the omission of the usual detailed statements showing classification of disbursements, &c. in connection with this service.



## DREDGING PLANT.

The following is a summary description of the dredging plant owned and operated by the Public Works Department in the various parts of the Dominion.

## MARITIME PROVINCES.

## The self-propelling elevator dredge "St. Lawrence" (iron hull)—

Length over all .....	175 feet.
Beam .....	30 "
Draft when loaded, aft .....	13.5 "
" " forward .....	8.5 "
Least working depth, (ladder with 32 buckets dropped 30 feet from bow) .....	8.5 "
Greatest working depth (bucket ladder dropped 42 feet from bow).....	28.0 "
Capacity of hopper for spoil material .....	350 cubic yards.
Speed when light .....	6 to 7 miles per hour.
Speed when loaded .....	3 to 4 "
Daily rate of dredging in hard material .....	350 to 700 cubic yards.
" " ordinary earth .....	750 to 1,000 "
" " soft material .....	1,050 to 1,400 "

## The self-propelling elevator dredge "Canada" (iron hull)—

Length over all .....	130 feet.
Beam .....	20 "
Draft when loaded, aft .....	11.5 "
" " forward .....	7.0 "
Least working depth .....	7.0 "
Greatest working depth (ladder 24 buckets) .....	16.0 "
Capacity of hopper for spoil material .....	90 cubic yards.
Speed when light and newly painted .....	6 to 7 miles per hour.
Speed when loaded .....	3 to 4 "
Daily rate of dredging in hard bottom .....	180 to 270 cubic yards.
" " with ordinary digging .....	180 to 360 "
" " in soft material .....	360 to 450 "

## The spoon dredge "New Dominion" (wooden hull.)—

Length over all .....	90 feet.
Width .....	28 "
Draft .....	5½ "
Greatest working depth .....	21 "
Daily rate of dredging in hard material .....	300 cubic yards.
" " ordinary material .....	450 "
" " soft material .....	600 to 700 "
Number of dump scows or barges used .....	4 "

## The spoon dredge "Prince Edward" (wooden hull)—

Length .....	80 feet.
Width .....	28 "
Draft .....	6 "
Greatest working depth .....	20 "
Daily rate of dredging in hard material .....	350 cubic yards.
" " ordinary material .....	500 "
" " soft material .....	600 to 700 "
Number of accompanying dump scows .....	3 "

## The spoon or dipper dredge "George McKenzie" (wooden hull)—

Length .....	90 feet.
Width .....	28 "
Draft .....	5 "
Greatest working depth .....	22 "
Daily rate of dredging in hard material .....	350 cubic yards.
" " ordinary bottom .....	500 "
" " soft material .....	600 "

## The boom and dipper Dredge "Cape Breton" (steel hull)—

Length .....	91 feet.
Beam .....	36 "
Draft .....	7½ "
Greatest working depth .....	34 "
Daily rate of dredging in hard material .....	1,000 cubic yards.
" " ordinary bottom .....	1,500 "
" " soft material .....	2,000 "
Number of barges used (steel, each of 210 cubic capacity) .....	2
One stone lifter including boiler, engine and large grips.	

N.B. Tug service performed by hired tugs in the Maritime Provinces.

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SHIP CHANNEL RIVER ST. LAWRENCE, BETWEEN QUEBEC AND MONTREAL.

The elevator dredge "Laurier" (wooden hull)—	
Length over all	168·0 feet.
Width of beam.	32·0 "
Depth of hold.	14·0 "
Average draught.	10·5 "
Greatest working depth.	42·5 "
Daily rate of dredging in hard clay, about.	1,700 cubic yards.
" " ordinary earth, about.	3,000 "
" " soft clay (Lake St. Peter).	4,000 "
The elevator dredge "Laval" (wooden hull, small buckets)—	
Length over all	150·0 feet.
Width of beam.	30·0 "
Depth of hold.	14·0 "
Average draught.	11·0 "
Greatest working depth.	43·5 "
Daily rate of dredging in hard material, about.	400 cubic yards.
" " ordinary clay.	2,000 "
The elevator dredges "Nos. 11" and "12" (wooden hulls)—	
Length over all	137·0 feet.
Width of beam.	29·5 "
Depth of hold.	11·0 "
Average draught.	8·5 "
Greatest working depth.	38·0 "
Daily rate of dredging in hard material, about.	200 cubic yards.
" " ordinary clay	2,000 "
The elevator dredge "No. 8" (wooden hull)—	
Length over all	137·0 feet.
Width of beam.	29·6 "
Depth of hold.	11·0 "
Average draught.	8·6 "
Greatest working depth (short bucket frame)	27·0 "
Daily rate of dredging in hard material, about.	200 cubic yards.
" " soft clay, about.	1,800 "
" " ordinary clay, about.	1,200 "
The stone lifter "No. 2" (wooden hull)—	
Length over all	80·0 feet.
Breadth.	25·0 "
Depth of hold.	7·0 "
Size of well.	22 by 10·0 "

Fourteen dumping scows, the dimensions and capacities of which are as follows :—

No. of Scows.	Length.	Breadth.	Depth of Hold.	Capacity.
1	60 feet.	16 feet.	6½ feet.	60 cubic yards.
7	80 "	16 "	7 "	75 "
2	84 "	20 "	8 "	150 "
2	90 "	18 "	7 "	150 "
2	95 "	23 "	8½ "	200 "

The coal barge "Caroline"—	
Length over all	103·7 feet.
Breadth.	22·5 "
Depth of hold.	8·3 "
Capacity	250 tons.
The coal barge "Waverly"—	
Length over all	100·0 feet.
Breadth	20·9 "
Depth of hold.	7·1 "
Capacity.	250 tons.
The coal scow "No. 1"	
Length over all	80·0 feet.
Breadth.	16·0 "
Depth of hold.	4·5 "
Capacity.	90 tons.



The coal scow "No 2"	
Length over all .....	54'0 feet.
Breadth.....	18'0 "
Depth of hold.....	4'0 "
Capacity .....	60 tons.

The sounding scow—	
Length over all .....	60'0 feet.
Breadth.....	25'0 "
Depth of hold.....	4'5 "

The winch scow "No. 1"	
Length over all.....	54'0 feet.
Breadth.....	18'0 "
Depth of hold.....	4'0 "

The winch scow "No. 2"—	
Length over all.....	50'0 feet.
Breadth.....	19'0 "
Depth of hold.....	4'0 "

The above ship channel plant was attended in 1897-98 by the tugs "John Pratt," "St. James," "St. Francis," "C. J. Brydges," "M. J. Parsons," "Cartier," "St. John d'Iberville" and "Emelia."

#### QUEBEC AND ONTARIO.

The elevator dredge No. 9 (wooden hull)—	
Length.....	137'0 feet.
Width.....	29'0 "
Depth of hold.....	11'0 "
Draft.....	9'0 "
Greatest working depth.....	38'0 "
Daily rate of dredging in hard material.....	200 cubic yards.
" " in soft " " .....	2,000 "

Dredge attended by tug "Delisle" with two dump scows, each of 80 cubic yards capacity.

The dipper dredge "Queen" (wooden hull)—	
Length.....	65'3 feet.
Width.....	25'0 "
Depth of hold.....	5'0 "
Draft.....	3'0 "
Greatest working depth.....	16'0 "
Daily rate of dredging in hard material.....	200 cubic yards.
" " in medium firm material.....	400 "
" " in soft material.....	600 "

Dredge attended by tug "Ottawa" with two dump scows, of 60 cubic yards capacity.

The dipper dredge "Nipissing" (wooden hull)—	
Length.....	70'7 feet.
Width.....	25'0 "
Depth of hold.....	6'0 "
Draft.....	4'5 "
Greatest working depth.....	20'0 "
Daily rate of dredging in hard-pan, etc.....	300 cubic yards.
" " in stiff clay.....	500 "
" " in soft clay and sand.....	800 "

Dredge attended by tug "St. Paul" and two dump scows, of 75 cubic yards capacity.

The dipper dredge "Ontario" (wooden hull)—	
Length.....	71'0 feet.
Width.....	25'0 "
Depth of hold.....	6'0 "
Draft.....	4'5 "
Greatest working depth.....	20'0 "
Daily rate of dredging in hard material.....	300 cubic yards.
" " in medium firm material.....	500 "
" " in soft clay and loose sand.....	800 "

Dredge attended by tug "Sir John" with two dump scows, of 60 cubic yards capacity.

The dipper dredge "Challenge" (wooden hull)—	
Length.....	70'5 feet.
Width.....	25'0 "
Depth of hold.....	6'0 "
Draft.....	4'5 "
Greatest working depth.....	21'0 "
Daily rate of dredging in hard material.....	300 cubic yards.
" " in medium firm or ordinary earth.....	500 "
" " in soft clay and loose sand.....	800 "

Dredge attended by tug "Trudeau" with two dump scows, having a capacity of 60 cubic yards.

## Department of Public Works.

The spoon dredge "St. Louis" (wooden hull)—

Length.....	50·0 feet.
Width.....	14·0 "
Depth of hold.....	4·0 "
Draft.....	2·5 "
Greatest working depth.....	12·0 "
Daily rate of dredging in hard-pan, etc.....	50 cubic yards.
" " in soft material.....	300 "

Dredge attended by tug "Sensation" with two dump scows, having a capacity of 30 cubic yards; plant used only for light digging.

A twin stone lifter (catamaran style)—

Length of each wooden hull.....	42·0 feet.
Width " ".....	8·5 "
Depth of hold.....	3·0 "
Draft.....	1·0 "
Distance between hulls.....	7·0 "

One wooden scow for reserve coal supply for Q. & O. dredging fleet—

Length.....	59·0 feet.
Breadth.....	17·0 "
Depth of hold.....	8·3 "
Draft when loaded.....	6·0 "
Capacity.....	100 tons.

### MANITOBA.

The dipper dredge "Winnipeg" (wooden hull)—

Length.....	71 feet.
Width.....	25 "
Depth of hold.....	6 "
Draft.....	4·5 "
Greatest working depth.....	20·0 "
Daily rate of dredging in hard material.....	300 cubic yards.
" " ordinary earth.....	500 "
" " soft clay and loose sand.....	800 "

Dredge attended by tug "Sir Hector" with two dump scows, having a capacity of 60 cubic yards, and a coal barge.

The "Priestman" dredge.

The steamer "Victoria."

### BRITISH COLUMBIA.

The dipper dredge "Mud Lark" (wooden hull)—

Length.....	90·0 feet.
Width.....	30·0 "
Depth of hold.....	7·9 "
Draft.....	4·6 "
Greatest working depth.....	40·0 "
Daily rate of dredging in hard-pan and hard gravel and boulders.....	300 to 400 cubic yds.
" " medium hard earth.....	500 to 600 "
" " soft material, mud, &c.....	800 "

Dredge "Mud Lark" attended by tug "Princess" and three dump scows.

The self-propelling stern wheel, clam-shell dredge "Muskrat"—

Length.....	60·0 feet.
Width.....	30·0 "
Depth of hold.....	3·3 "
Draft.....	1·7 "
Daily rate of dredging in loose gravel, &c., the only kind of material which has been worked so far.....	300 cubic yards.

The "Muskrat" works with two scows in attendance.

The snag-boat "Samson" and one scow.

The snagging scow built for use on the Fraser while the "Samson" was operating on the Stikine.



## GRAVING DOCKS.

The Dominion Government owns and maintains three graving docks, viz. :—The Lorne Graving Dock, at Lévis, in the province of Quebec ; the Kingston Graving Dock, at Kingston, in the province of Ontario ; and the Esquimalt Graving Dock, at Esquimalt, near the city of Victoria, in British Columbia.

## LÉVIS GRAVING DOCK.

The city of Lévis is situated on the south shore of the St. Lawrence, opposite the city of Quebec.

*Construction.*—In 1878 the construction of a graving dock was commenced by the Harbour Commission of Quebec at St. Joseph de Lévis or Lauzon, a village two miles below the city of Lévis. The amount required for the prosecution of the work was loaned by the Dominion Government to the Harbour Commissioners of Quebec under authority of the Act 38 Victoria, chap. 56, assented to on the 8th of April, 1875.

The dock was completed in 1888, at a cost of \$910,000.

The full control and administration of the dock was assumed by the Dominion Government, and it became a public work of Canada under authority of the Act 50 Vic., chap. 6, assented to on the 22nd of May, 1888, which also released the Quebec Harbour Commissioners from all obligation to repay to the Government of Canada the whole or any part of the advances made to them towards the construction of the work or any sums in payment of the interest thereon.

The general plan of the dock is a rectangular figure, 445 feet long, 100 feet wide at coping level and 73 feet wide at the bottom, with a circular head 31 feet radius. Square offsets of 19 feet on each side form the top and width of the timber slides and stairs, which are placed in pairs, side by side, at both ends. The width of the inner invert, between the main body of the dock and the caisson berth is 8 feet, making the total length of the dock inside the first meeting face of the caisson 484 feet.

The depth of water on the sill is  $26\frac{1}{2}$  feet at high water spring tides and  $20\frac{1}{2}$  feet at high water neap tides.

The entrance of the dock is 62 feet wide and is closed by a caisson travelling on rollers, worked by a pair of high pressure auxiliary engines of 34 horse-power. These engines also work a small pump with a capacity of 900 gallons per minute, which is used to clear the drainage well when the dock is in use.

The main pumps, two in number, are of the ordinary style of lift pumps, 4 feet in diameter with a 5-foot stroke, and discharge 14,000 gallons per minute.

They are worked by a pair of jet condensing engines,  $27\frac{1}{2}$ -inch cylinders with 3-foot stroke, and of 400 horse-power.

Steam is supplied by three tubular boilers 14 feet 10 inches in length and 6 feet in diameter.

The dock proper is built of the best quality of limestone from the Terrebonne quarries, the courses being exceptionally heavy and laid in Portland cement. It is lighted with 12 arc lamps supplied from a Thomson & Houston dynamo, so that vessels can be docked at night and work carried on without interruption.

The following is a statement showing the number of vessels docked, the cost of repairs and maintenance, and the amounts collected during each fiscal year from the time the control of the dock was assumed by the Government, in 1888, up to and including the present fiscal year. Under the head of repairs and improvements are set down the amounts expended for such works and additions as could not be performed by the

Department of Public Works.

ordinary staff of the dock. In all cases the cost of ordinary care and small repairs to the machinery is included under the head of maintenance.

Fiscal Year.	Number of Vessels Docked.	Repairs and Improve-ments.	Mainten-ance.	Revenue.	Remarks.
		\$ cts.	\$ cts.	\$ cts.	
1888-89.	3	.....	4,965 67	2,349 60	Ordinary care and small repairs.
1889-90.	3	2,194 90	9,331 74	17,498 99	Cleaning, painting and repairs to machinery.
1890-91.	5	6,286 24	5,605 31	18,063 52	Iron beams placed under the bearings of the shaft of the main pumps to strengthen bearings and do away with vibration ; machinery painted and generally overhauled ; a quantity of gravel and stones removed by one of the departmental dredges assisted by a stone lifter, from the shoal off the entrance to the dock.
1891-92.	3	4,981 35	8,298 76	4,384 97	Sluice valves in caisson and culverts taken off their seats, cleaned of all rust and replaced ; inside of caisson capped and two coats of cement-wash applied ; outside of caisson and folding bridge painted and joints in masonry of dock repointed. General and thorough repairs to engines of auxiliary pumps and boilers.
1892-93.	13	2,626 03	7,838 47	13,306 43	Engine house and shop painted three coats ; caisson placed in chamber, and bottom and lower portions of sides and ends scraped and painted two coats ; timber facing repaired to ensure close joint with the invert and side walls.
1893-94.	8	.....	7,967 07	13,310 94	Stone foundation for coal shed built, but shed not completed.
1894-95.	8	.....	8,321 62	13,795 19	Coal shed completed and ordinary care to machinery, &c.
1885-96.	8	.....	9,205 80	8,835 39	Caisson berth and recess cleaned of sediment ; bottom, sides and ends of caisson scraped of all rust and painted two coats.
1896-97.	7	.....	7,718 88	12,346 57	Head and sides of dock levelled back of coping and drain put in ; 40 staging planks and 130 horizontal timber shores purchased.
1897-98.	7	.....	6,148 32	19,839 97	Ordinary care and repairs to pumping machinery and caisson.
	65	16,088 52	75,401 54	123,731 57	

From the foregoing statement it will be seen that 65 vessels entered the graving dock since it was completed in 1888, and that the total amount of dockage collected to the end of the last fiscal year is \$32,241.41 in excess of all sums expended for general repairs and maintenance.

The expenditure of \$6,148.32 incurred during the fiscal year for working expenses may be subdivided as follows :

Staff.....	\$ 4,058 01
Labourers.....	630 51
Coal, oil, waste, &c.....	1,459 80
Total.....	\$ 6,148 32

The amount expended on this work is \$1,001,490.16 made up of \$910,000 for construction and \$91,490.16 for maintenance and repairs.

KINGSTON DRY DOCK.

Kingston is situated at the outlet of Lake Ontario, 172 miles west of Montreal, and is an important commercial centre.



*Construction.*—In 1888 the construction of a dry dock, located near the centre of Kingston Harbour was commenced and was completed in 1892 at a cost of \$461,097.72.

It is built of limestone laid in cement mortar ; has good yard accommodation, and can take in any vessel that passes through the Welland canal ; the depth of water on the sill being  $14\frac{1}{2}$  at low water, and  $16\frac{1}{2}$  feet at high water.

The general plan of this dock is a rectangular figure. The length from the foot of the stairway, at its head over the keel blocks, and up to the inner invert is 280 feet. This invert is 10 feet wide, hence from the inner side of the caisson to the foot of the stairs the distance is 290. By placing the caisson gate out on the apron the last mentioned length can be increased by 23 feet to 313 feet. The length at coping level from the outer end or lake face of the wing walls of the dock to the top of the stairway at its head is 370 feet. The width of the dock between walls is 47 feet at floor level and 70 feet at coping level. Its depth from the top of coping to the floor at the sides is 20 feet 6 inches, the radius of the inverts being 193 feet. The rudder well commences at 10 feet from the face of the inner invert and is  $2\frac{1}{2}$  wide, 24 feet long, and 12 feet long. Keel blocks are placed at 5 feet centres from end to end of the dock ; there are also 32 bilge blocks at 10 feet centres on the floor of the dock.

The caisson is 59 feet in length on long face, 57 feet on short face, 13 feet wide by 22 feet deep. It is operated by a worm gear arrangement in connection with the auxiliary engines hereinafter alluded to.

The large steam boilers (battery of 4) are connected and provided with controlling valves, so that one or more of them may be used at the same time. The length of the shell is 14 feet, each boiler has  $83-3\frac{1}{3}$  inch flues of the same length as the shell ; diameter 5 feet 6 inches ; thickness of plates  $\frac{3}{8}$  inch. Pressure of steam carried, 100 pounds to square inch.

The small auxiliary boiler is of the drop flue type. The shell, which is 9 by 4 feet, plates  $\frac{3}{8}$  inch thick, has 250 drop flues  $1\frac{1}{4}$  by 18 inches, with circulating tubes. This boiler saves from 50 to 75 per cent of the fuel required to keep up steam in one of the large boilers for general purposes, when the main pumps are not being operated.

The main engines two in number, are of the vertical high pressure type, the cylinders being 18 by 18 inches. These engines operate the main pumps.

The main pumps are of the centrifugal type having each a 20 inch diameter discharge, and jointly capable of discharging 30,000 gallons per minute against a head of 33 feet.

The auxiliary engines are of the vertical high pressure type. The two cylinders are each 12 by 12 inches. These engines operate the auxiliary pump and the caisson.

The fire pump was made by Knowles Co. of Boston ; its steam cylinder is 15 by 21 inches and the water cylinder 10 by 21 inches. This pump can be used to do the duty of the auxiliary pump, should the latter be disabled.

The pony engine and pump has two steam cylinders, each 6 by 7 inches ; its water cylinder is 4 by 7 inch. This pump is used for feeding the water supply to the boilers and for sprinkling purposes, and is capable of supplying 3,000 gallons per minute against a head of 32 feet.

A large steam derrick is used for lifting purposes in connection with docking operations and repairs.

Beside the machinery building which is of stone, and measures 84 by 36 feet, exclusive of chimney 15 by 15 feet at the base ; a wooden metal cased shed, 30 by 40 feet, has been erected to the southward of the said building for the storage of coal. The dock property is inclosed by a wooden fence of the best description, 868 feet long, with gates on Gore and Union streets.

During the fiscal year this dock was maintained in good working condition, ordinary care being bestowed on the pumping machinery, caisson, derrick, &c. No new work was undertaken.

Electric lights and a ship carpenter's shed are wanted to complete the full equipment of the dock.

The following is a statement showing the number of vessels docked, the cost of repairs and maintenance, and the amounts collected during each fiscal year since the

# Department of Public Works.

dock is in operation, up to and including the present fiscal year. Under the head of "Repairs and Improvements" are set down the amounts expended for such works and additions as could not be performed by the ordinary staff of the dock. In all cases the cost of ordinary care and small repairs to the machinery is included under the head "maintenance."

Fiscal Year.	Number of Vessels Docked.	Repairs and Improve-ments.	Staff and Mainte-nance.	Revenue.	Remarks.
		\$ cts.	\$ cts.	\$ cts.	
1891-92.	21	442 33	4,978 90	2,105 70	A travelling crane erected in the engine-room, 32 bilge blocks with the necessary hauling chains placed in position.
1892-93.	51	48,612 54	8,033 91	6,196 49	A vertical boiler 4 feet in diameter, by 9 feet in height was purchased. Fire pump removed from upper to lower floor of engine-room. A shed for storage of coal was built, also a wooden fence 868 feet in length around the dock property.
1893-94.	44	782 97	6,607 46	7,453 01	Minor repairs.
1894-95.	24	.....	5,939 51	2,878 23	Steam derrick painted; stone work pointed with Portland cement. Wood work of engine house painted, &c.
1895-96.	65	925 00	5,357 16	3,954 78	Putting in sprocket wheels and chains in lieu of old drums and cables for operating the caisson, &c.
1896-97.	58	... ..	4,657 10	6,360 60	Minor repairs.
1897-98.	35	.....	4,733 79	7,448 31	Painting coal shed and caisson; leveling dock premises; concreting engine-room floor, &c.
	298	50,762 84	40,307 83	36,397 12	

The expenditure of \$4,733.79 incurred during the present fiscal year for working expenses may be subdivided as follows:—

Staff.....	\$ 2,995 00
Wood and coal.....	757 86
Rent, water, &c .....	185 00
Necessary repairs, paint, oil, waste, &c.....	795 93
Total.....	\$4,733 79

The total amount expended on this work is \$552,168.39 made up of \$461,097.72 for construction, and \$91,070.67 for improvements, maintenance and repairs.

## ESQUIMALT GRAVING DOCK.

Esquimalt, in the electoral district of Victoria, is situated on the straits of San Juan de Fuca, about 3 miles from the city of Victoria.

*Construction and description.*—This dock is built in a small cove in Esquimalt Harbour. It was commenced by the provincial government of British Columbia, but the work was taken over by the Dominion Government while being proceeded with, and the dock was completed and opened in July, 1887.



The principal dimensions of the dock and caisson gate may be stated as follows :—

	Feet.	Inches.
Length of dock over keel blocks.....	430	0
Width of inner invert.....	20	0
Width of caisson chamber.....	15	10
Width of outer invert.....	15	0
<hr/>		
Total length of dock.....	480	10
Width of dock at coping level.....	90	0
Width of dock at entrance.....	65	0
Width of floor of dock.....	41	1
Radius of inverts.....	16	6
Total depth of dock above inverts.....	33	6
Height of inverts above floor of dock.....	3	0
Height of keel blocks.....	2	10
Length of keel blocks.....	4	0
Length of caisson (inside facing).....	67	0
Length of caisson (outside facing, reversible).....	15	8

At low water the depth on the inverts is 24 feet 6 inches, and at ordinary high water 26 feet 6 inches.

The following is a summary description of engines, boilers, pumps, electrical and diving apparatus, hoisting and hauling machinery, buoys, lathes, other machine tools and appliances, and supplies required for repairing, fire fighting and other purposes which are available for use at this station :—

- Two condensing engines, cylinders 27 inches in diameter, 36-inch stroke.
- Two lifting pumps, cylinders 48 inches in diameter, 60-inch stroke.
- Three Cornish boilers, 6½ feet in diameter and 14 feet in length.
- One high pressure auxiliary engine, cylinder 16 inches in diameter, 20-inch stroke.
- One centrifugal drainage pump, 14-inch suction, 12-inch discharge.
- One return tubular boiler, 5 feet 3 inches in diameter and 14½ feet in length.
- One hauling engine for caisson, cylinder 12 inches in diameter, 14-inch stroke.
- One centrifugal drainage pump, 6-inch suction, 5-inch discharge.
- One Edison No. 4 dynamo, 1,600 C. P., 16 lamps around dock.
- One engine for dynamo, 8 inches in diameter by 12-inch stroke.
- One iron movable stop-gate for caisson chamber.
- Twenty-five iron bollards around dock.
- One wooden crane, 10 tons capacity.
- Eight hand capstans.
- Six hydrants.
- Three hose reels and 200 feet of canvas hose.
- One diving apparatus complete.
- One lathe, 6 foot bed.
- One drilling machine.
- One set of taps and dies complete.
- One steam box for bending planks.
- Two iron warping buoys.
- Two dolphins to mark channel at entrance of dock.

The following is a statement showing the number of vessels docked, the cost of repairs and maintenance, and the amounts collected during each fiscal year since the dock is in operation, up to and including the present fiscal year.

Under the head of repairs and improvements are set down the amounts expended for such works and additions as could not be performed by the ordinary staff of the dock.

## Department of Public Works.

In all cases the cost of ordinary care and small repairs to the machinery is included under the head of maintenance :

Fiscal Years.	Number of Vessels Docked.	Construc- tion.	Repairs and Improve- ments.	Staff and Main- tenance.	Revenue.	Remarks.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.	
1882-87.	.... .	1,149,146 25	.....	.....	.....	Cost of construction, including \$250,000 refunded by the Imperial Govern- ment.
1887-88.	6	.....	.....	6,342 63	5,337 46	Electric lights installed, &c.
1888-89.	18	.....	8,571 22	12,720 10	14,811 86	Electric lighting completed ; a lathe and drill set up ; a small centrifugal pump substituted for the auxiliary pump ; sheds for fire-hose carts erected, &c. Some dredging done.
1889-90.	10	.....	7,150 00	12,719 94	13,563 62	New keel blocks, hand rails, staunchions, &c., provided, and minor repairs effected by dock staff.
1890-91.	30	.....	2,639 65	12,725 90	29,603 14	A coal shed, 58 x 36 feet, erected ; gen- eral repairs and improvements by dock staff.
1891-92.	18	.....	2,410 49	14,232 47	18,416 23	Pump wells and foundations for ma- chinery repaired ; a large portion of engine-room floor, which had been cracked by settlement, was relaid with Portland cement concrete, and wall of engine-house facing dock pulled down and rebuilt. In addition many minor repairs were done.
1892-93.	11	.....	8,859 78	13,196 61	23,204 38	A leak in the caisson chamber repaired, and minor improvements and repairs made.
1893-94.	7	.....	.....	10,075 59	10,786 70	Caisson scraped, painted and machinery generally overhauled.
1894-95.	11	.....	.....	10,419 76	6,320 25	General repairs, painting, &c.
1895-96.	15	.....	.....	12,355 09	10,221 68	Spur driving wheel of main pumps, which had been broken, was replaced by a new wheel. A planer added to the equipment, and necessary repairs and renewals made.
1896-97.	13	.....	.....	10,770 28	7,514 80	Ordinary repairs, painting.
1897-98.	14	.....	.....	11,745 84	6,233 52	Repairs.
Totals..	153	1,149,146 25	29,631 14	127,304 21	146,013 64	

During the fiscal year, the whole of the dock machinery was overhauled. The furnace shed was enlarged, and a brick drain built to carry off surface water from engine-rooms. New sky-lights were put in the roof of work shops.

A new stone and brick foundation was built under the office, a verandah made, and the floor repaired.

The total expenditure for the year amounts to \$11,745.84.

### SLIDES AND BOOMS.

The Dominion Government owns and operates slide and boom works built to facilitate the passage of square timber, round logs flatted and dimension timber, &c., on the River Ottawa and tributaries, on the lower 40 miles or so of the St. Maurice, and in the Trent and Newcastle District between Fenelon Falls and Heeley's Falls.

In the subjoined reports, the superintending engineers of these river works Messrs. G. P. Brophy, F. X. Thos. Berlinguet and R. B. Rogers, give particulars relative to the works of construction, reconstruction, improvement and repair



carried out under their supervision on government slides, booms, piers, dams, streams, buildings, &c., during the fiscal year, the expenditures incurred for staff, maintenance, improvements, &c, the quantities of the various descriptions of timber that pass through their works, the revenue accrued from toll levied on the said timber, and other information of general interest and utility to lumbermen and the public at large.

## REPORT ON THE OTTAWA RIVER WORKS

(By G. P. BROPHY, SUPERINTENDING ENGINEER.)

OTTAWA, 27th September, 1898.

The Chief Engineer,  
Department of Public Works,  
Ottawa.

SIR,—As requested by you in communication dated 15th July last, I have the honour to submit the following report on the works under my charge, on the Ottawa River and certain of its tributaries, for the fiscal year ended 30th June, 1898.

During the autumn months of 1897 a moderate pitch of water prevailed, and the great bulk of timber and the saw-log drives reached their destination.

When the water was at its lowest pitch, the foundations of the various structures were examined and repairs commenced. The work under this head was continued to completion and may be described as follows:—

### REPAIRS AT STATIONS ON THE OTTAWA RIVER (MAIN STREAM).

*Carillon.*—The work consisted of repairing guide-boom at the head of slide, patching sides of slide at entrance and repairing apron at foot. The work was performed by the men engaged at the station during the timber running season and under the direction of the slide-master.

*Hull or North Chaudière.*—The planking in bottom of slide was, in places, renewed, projecting spikes countersunk, boom and apron chains adjusted, new stop-logs procured and when millponds and adjacent hydraulic channels were unwatered, a thorough overhaul was given to the slide and bulk-head foundations and a new glance was built on north side under Hull bridge. The bulk-head of the upper slide was renewed in its superstructure, the uprights having been spliced with new timbers, and new stringers floor and railing provided, the iron stop-log hoisting gear was renewed, the roof of the slide-master's house re-shingled and drain opened up and obstructions removed.

*Ottawa or South Chaudière.*—Portions of the slide sheeting and bottom planking, where worn, were renewed; all projecting spikes driven in; apron attachments strengthened; the boom chain fastenings adjusted in their tensions; new stop-logs furnished to take the place of some that were decayed in the bulk heads; crab frames and hoisting apparatus renewed; an extension and enlargement of general store house effected; roofs shingled and the buildings, sheds and fences whitewashed to protect them from the weather. During the winter months, ice had to be cut to relieve the booms on account of the continual rise and fall of the water in the adjacent mill-ponds, and snow was regularly removed from roofs of store houses and sheds and drawn from general yard.

*Roadway and Bridge Approaches between Ottawa and Hull.*—The Hull roadway approach was cleaned and scraped from time to time, and refuse carted off; the granite pavements extended and completed; water holes kept open; sidewalk on east side raised to conform to new grade; railing on west side of "Devil's Hole" and sidewalks and railings generally repaired. Throughout the winter snow was removed from this thoroughfare; pitch holes filled with snow and water, and the line of sidewalks kept clear. The guard-timbers along the causeway were repaired and additions made where necessary.

*Hull Slide Bridge.*—The roadway planking was wholly renewed; the piers supporting the structure braced and strengthened and rubbish removed by frequent scraping.

*Union Bridge.*—The planking of both roadway and sidewalks was renewed, where required; the thoroughfare cleaned, and the depth of snow regulated to accommodate travel.

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*Chaudière Slide Bridge.*—The rods and braces were tightened and the trusses, railings, &c., painted. The roadway was renewed the full length of the bridge; this required pine stringer pieces 4 inches by 11 inches, on which were laid two courses of pine plank, the lower 4 inches and the upper 3 inches, making a floor of 7 inches in thickness, and it may be mentioned that on removing the old material, much of it was found to be in a state of decay.

*Sappers Bridge.*—(Ordinary repairs).—On the southerly side, it became apparent that the angle irons supporting the cross floor beams had a tendency to spring downwards, consequently it was found necessary to give additional strength to the bearings by having wrought iron bars with spur ends, run with lead into recesses, made in the solid masonry of the original structure.

*Sappers Bridge* —(Extraordinary repairs).—As this is a most important and busy thoroughfare, it was deemed advisable, in order to meet the requirements of the constant stream of heavy traffic, that a permanent pavement should be laid. On the portion of the work having a solid foundation, that is to say, the easterly approach and the old stone bridge proper, a bed of concrete 8 inches thick was prepared. On this, scoria blocks, in sand, were set and grouted. From the portion of the bridge having a wooden floor two courses of the old planking were removed, and a new course of 3-inch plank substituted, on which a coating of mastic was spread, for the purpose of receiving the scoria blocks which were thus supported by a thickness of 6 inches of plank, in layers. A supply of plank, stringers, cement, sand, scoria blocks, spikes, concrete-stone, &c., has been procured for the extension of sidewalks and widening of roadway on the northerly side of the bridge.

This work will be carried out after the iron posts &c., have been received and, it is expected that the whole will be completed before winter sets in.

*Maria Street Bridge.*—A quantity of broken stone was laid on approaches; worn out planking on roadway and sidewalks renewed, and railings braced.

*Calumet.*—At this station certain measurements were made preparatory to the overhauling of the aprons, side piers and bulk heads. A controlling dam about 160 feet long with an average height of 13 feet was built across the channel to the west of the third slide. Heretofore there was a strong current from this channel which struck across the course of cribs after they cleared the third slide and carried them with violence against the shore, thus causing risk of injury to raftsmen and damage and delay to timber.

The dam has a regulating sluice  $16\frac{1}{2}$  feet wide; on each side there is a square pier built up to the full height of dam, these carry a bulk-head platform with hoisting apparatus for handling the stop-logs. The lower part of the dam is a rectangular stone-filled crib and on this rests the upper portion which is an ordinary flat dam sheeted on the face. A coffer-dam had to be constructed to facilitate this work, and it was necessary to blast some of the bed-rock to secure a sluice opening at the proper level. The timber apron below the outlet of the third slide was repaired, the dimensions being 45 feet by 27. Missing timbers were replaced, and the top sheeted with 4 inch maple plank. A glance pier at the foot of the third pier was repaired by putting on three new courses 210 feet long. The apron at the foot of the second or long slide was rebuilt; the timbers used were a birch sill 19 in. x 19 in. x 29 feet, and fingers 12 in. x 14 in. x 45 feet. A new guide boom, two plies, 60 feet long, was constructed and placed at the entrance of the second slide. Damaged planks in all three slides were made good, and projecting spike-heads driven home.

*Joachims.*—A supply of plank and spikes was provided at this station for general repairs of slide bottoms, sides of piers, bulk-heads, tops of booms and corners of boom piers, &c.

*Rocher Capitaine.*—A portion of the pier-dam 50 feet long, 12 feet wide and 9 feet high at canal entrance, was rebuilt. The corners of piers, in many places scooped out, were filled with timber and plank and fenders attached as a means of protection. The slide planking was overhauled and repaired; some stone filling replaced and guide booms strengthened in coverings and attachments.



## REPAIRS ON TRIBUTARIES OF THE OTTAWA.

*Gatineau River.*—The work carried out at this station consisted of the removing of debris from the new canal, and from the outlet of Pond Creek ; repairing and strengthening booms, piers and sorting gaps and the maintenance of the equipment at this important point. The log channels and canals became blocked up with bark, rubbish, and shifting sand to such an extent as to impede the passage of logs and timber on their way to the sorting gaps. This may be said to be of yearly occurrence, rendering excavation necessary at the season of lowest water. A pier was rebuilt, at the upper trip of main boom, 22 ft. x 20 ft. x 17 ft. high from lowest water line up. The old stone filling was removed and with some of the iron spikes used again.

*Pond Creek Bridge.*—Spanning the outlet from the reservoir lake or pond is 259 feet long, with an average planked width of 18 feet. The constant and heavy traffic on this structure had worn out the sheating the length of the bridge. A new covering of red pine 3 inches thick was laid ; the work was done by the men employed at the Gatineau station and the materials charged to the appropriation for maintenance of "Dominion Traffic Bridges."

*Madawaska River.*—At Arnprior certain minor repairs to booms were effected. Flat dams were rebuilt at the following stations on the upper reaches of the river :—*Bayley's Chute*, 85 feet long, 9 feet high and 16 feet face ; *Duck's Rapids* (lower dam on north side), 72 feet long, 8 feet high and 18 feet face ; *Barret's Chute* (middle dam on north side), 110 feet long, 9 feet high and 20 feet face. Along the crests of these dams fenders of 4 inch maple plank were laid, and the outer ends, for a distance of 10 feet, sheeted with material of the same description to protect, as much as possible, these exposed portions of the works from injury by abrasion of passing logs and the movements of floating ice. A new support pier, 20 feet square on bottom, 12 feet at top and 24 feet high, was built at the sorting boom at the upper end of the Calabogie Lake. A quantity of maple plank was laid up at *Chain Rapids* and *High Falls Slides*, so as to be easily accessible during the timber running season. Some minor repairs were made in the sheeting and other parts of the slides and dams at the above mentioned stations on this stream.

*Coulouge River.*—At High Falls station a snubbing pier, with two oak posts, was built at the upper end of the guide boom. Near the entrance to the slide, a stay pier, 15 feet by 5 feet by 6 feet, was built and a new stay provided for guide boom. At the entrance bulk-head the stop-log checks were renewed, and six oak posts put in position, which necessitated the construction of a coffer-dam. A portion of the slide having shoved out towards the main chute, a section, 100 feet in length of the superstructure was moved back to proper line and supported on trusses secured to foundation cribwork, and the structure at this place was braced and steadied by the use of rods, of the best description of iron, firmly attached to bolts set in the solid rock. Many of the posts, braces and sills had to be renewed, and about half of the sheating in slide was replaced. The slide which is almost 3,000 feet long was raised to grade in various places and its alignment adjusted. At a point about 350 feet from the outlet of the slide, a portion of a foundation crib was rebuilt ; this part was 50 feet long and 12 feet high. Defective foot-boards were removed and new ones substituted ; the top planking of bulk-head was renewed and the platform enlarged ; the crab frame on bulk-head at entrance was rebuilt and hoisting appliances mounted thereon.

*Black River.*—At High Falls station, a short distance from the mouth of the stream, a section of the slide, between 70 and 80 feet in length, when it was private property, was built on a large mass of mill refuse, such as slabs, &c., and as this foundation was constantly settling the slide sagged out of the proper grade. To overcome this difficulty, it became necessary to remove the section, excavate the rubbish to the solid rock and fill in the gap with bents erected on pier work to support the slide superstructure. The other improvements, after many years use, had become much dilapidated

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through decay and ordinary tear and wear, therefore, more extensive repairs than usual were required. The work done at this station may be summarized as follows:—

Building pier dam between first and second bulk-heads, 333 ft. long, 14 ft. high and 15 ft. wide at base, drawn in to five (5 ft.) feet on top and sheathed on face; new boom between first and second bulk-heads, two sticks wide, 278 ft. long and two support piers, each 7 ft. x 6 ft. x 10 ft.; new wing dam at second bulk-head 43 ft. x 8 ft. x 7 ft., sheathed on face; new support pier for boom, on west side above bridge, 7 ft. x 8 ft. x 4 ft.; new bulk-head at entrance; two piers rebuilt at gap, about half a mile above the slide; section of slide 70 ft. long and 44 ft. high rebuilt on cribwork and bents; sides of slide renewed with 4-inch plank; decayed sills and posts replaced; rocky reef removed from the outlet of slide; double boom 525 ft. long, 24 in. x 14 in., constructed at head of slide; new single boom 260 ft. long of 14-in. flat timber, placed on the westerly side of the gap, and at the mouth of the stream a support pier 16 ft. x 16 ft. x 9 ft. high was rebuilt from low water mark.

*Petewawa River—Crooked Chute Station.*—The bulk-head pier on the north side of slide was taken down to the water's edge and rebuilt with sound timber, and the old stone which had been removed was replaced in the reconstructed cribwork of the pier. The lower end of this pier is 50 ft. long x 9 ft. wide x 8 ft. high; the upper end having an average length of 30 ft. and width of 20 ft. x 9 ft. high. The corner of slide at entrance was sheathed with 6-inch maple where it had been cut into by passing logs and timber. The bulk-head and hoisting gear for stop-logs were also rebuilt and some small repairs effected to the sheeting on the sides of the slide and on the main governing dam.

*Third Chute.*—The long slide here (1,300 ft.) was overhauled in bottom, side planking, posts, sills, braces, foot boards, &c. False sills and posts were put in alongside the old ones, and the structure generally strengthened. The booms at entrance of slide were reinforced by the insertion of tie pieces and lengthened about 110 feet. Two support piers for guide boom, respectively, 18 ft. x 18 ft. and 16 ft. x 18 ft. were reconstructed from lowest water mark and a new pier, 12 ft. x 12 ft. x 5 ft. high was built on the westerly side of slide entrance as a fastening for the upper end of guide boom.

*Second Chute.*—Two guide boom support piers 16 ft. x 18 ft., were rebuilt from low water up; the slide widened 14 inches near the entrance; decayed posts, braces and planking removed and new materials substituted.

*First Chute.*—The flat dam at south side of slide entrance was raised 2 feet for a distance of 60 feet, where formerly there was a strong cross current that proved detrimental to the proper feeding of logs and timber to the slide.

*Dumoine River.*—At High Falls station two guide boom piers 14 ft. x 14 ft. x 6 ft. high were rebuilt from low water line. The pier dam on the west side of head of slide 157 ft. x 9½ ft. x 6 ft. high was completely renewed. The two bulk-head piers were rebuilt and the slide entrance widened by one foot; the pier on the west side being 44 ft. x 9 ft. x 9, and that on the east 62 ft. x 10 ft. x 12 ft. A support pier 20 ft. x 10 ft. x 12 ft. high was built behind the waste gate pier on east side in order that it might better resist the force of the spring floods. Stop-logs were provided for the slide and for the openings in the pier dam. The platform at slide entrance was renewed and a roller mounted for handling the stop-logs. The planking posts and braces of the slide were repaired where decayed and worn. At one point, about 500 feet from the outlet, the slide had sunk owing to decay of foundation timbers; the structure was brought to grade by the insertion of new timbers and wedge pieces under the sills. The piers at the outlet had been damaged at the corners by logs and timber from the chute; these were repaired and fender planks spiked on as a means of protection. An angle plate and flat bars of iron were placed at the entrance of the slide with the same object in view.

Last spring the waters of the Ottawa and tributaries did not reach more than an average height, and they remained at a favourable pitch for lumbering operations during the early summer months.



The following statement, which has been compiled from a return furnished by the collector of public works revenue, shows the volume of business done on these works, and the amount of revenue accrued as tolls for the fiscal year covered by this report :—

Passed through Government Works.	Pieces.
Square timber.....	25,851
Saw-logs.....	4,066,001
Boom and dimension timber.....	103,640
Round and flat timber.....	6,947
Cedars.....	25,977
Railway ties.....	231,044
Fence posts.....	69,399
Telegraph poles.....	400
	<hr/>
	4,529,259
	<hr/>

Also 8,297·47 cords of pulp wood and 93½ cords shingle wood.

The revenue accrued on above was . . . . . \$60,765.91

In respectfully submitting the above,

I have the honour to be, sir,  
Your obedient servant,

GEO. P. BROPHY,  
*Suptg. Engr. Ottawa River Works.*

REPORT ON THE ST. MAURICE RIVER WORKS.

(By F. X. THOS. BERLINGUET, SUPERINTENDING ENGINEER.)

THREE RIVERS, 3rd November, 1898.

The Chief Engineer,  
Department of Public Works,  
Ottawa.

SIR,—I have the honour to submit the following report relating to works under my charge, on the St. Maurice River, for the fiscal year ended 30th June, 1898.

The trade of the St. Maurice River, has now taken a turn that promises to be permanent.

The freshets of the year 1897 were greater than those of previous years. The river commenced to rise on the 7th April, and reached its maximum height on the 28th, corresponding to 29<sup>4</sup>/<sub>10</sub> feet above the lowest water level; the highest water level ever known.

After the 25th May the water commenced to recede, and reached its lowest level on the 13th August, falling to 3 feet on the gauge at Grand Piles.

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The mean fluctuation of the water level for each month during the working season, for the last six years has been as shown in the following :—

TABLE of mean elevations of the water, in feet and tenths above the zero of the Grandes Piles gauge, in each month of the working seasons, August 1892 to November 1897.

Year.	April.	May.	June.	July.	August.	September.	October.	November.
1892.....					7·5	3·8	4·7	5·1
1893.....	3·9	12·7	10·4	6·1	4·6	5·0	4·1	3·6
1894.....	8·5	13·2	8·8	7·6	5·3	4·2	7·5	8·1
1895.....		14·0	9·2	5·9	6·3	5·1	4·1	4·4
1896.....	9·7	13·3	7·7	6·4	3·4	2·6	3·3	8·5
1897.....	6·4	14·7	9·4	6·7	5·3	4·4	3·1	2·7

The three rises of water level which we had, in June, July and August, 1897, afforded a good pitch of water suitable for floating logs.

The tail drive arrived at Three Rivers on the 21st October, 1897, two days earlier than in 1896.

The last logs for Three Rivers were sluiced from the government booms at the railway bridge on the 12th November, 1897 ; just seven days before the formation of the ice on the river.

The following statement, furnished by the collector of slide and boom dues shows the quantities of the various descriptions of timber that passed the government works, during the season 1897, together with the amount of revenue accrued as tolls for the fiscal year covered by this report :—

STATEMENT of the number of saw-logs, &c., that passed through the government slide and works on the St. Maurice River during the fiscal year ended 30th June, 1898

	Pieces.
Saw-logs.....	1,174,875
Logs for pulp wood.....	588,908
Cedars.....	125
Total .....	1,763,908

The revenue accrued on the above was \$29,893.41.

After the working season, the slide, piers and booms were examined, and in the fall and during the winter necessary works of repair and reconstruction were carried out at the various stations. These works may be described as follows :—

### GRANDES PILES STATION.

The work performed at this station consists of :—Repairs made to piers Nos. 1, 2, 3, 3½, 4, 4½, 5, 6, 7, 8, 10 and 11. New sheathing was put around them where required and some were raised to the proper height. Mooring posts were renewed where found necessary and all others put in order for the following year.



GRAND'MERE STATION.

Slight repairs were made to pier No. 1, and to the main boom.

SHAWENEGAN STATION.

Slight repairs were made to piers Nos. 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 67, 69, 70, 71, 72, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, and 89.

The bottom and sides of the slide were partially repaired by replacing the worn out timber and planking with new material; the projecting spikes in the bottom and sides of the slide were counter-sunk. Slight repairs were made to the house occupied by the boom-master at Shawenegan Bay. About 1,800 feet of three-ply booms, were strengthened.

Mooring-posts were renewed on all piers where found necessary.

THREE RIVERS STATION.

Piers Nos. 1, 3, 6, 8, 12, 19, 23, 25, 27, 29, 30, 31, 32, 34, 40, 44, 50, 51, 53; 54, 56 and 61 were partially taken down and the damaged timbers removed and replaced by new. Plank fenders were spiked on the exposed sides of the piers; some new snubbing posts put up, and the stone filling brought up to level; 500 feet of three-ply booms and 250 of five-ply booms were constructed, and sixteen pieces of pine booms measuring 2,011 feet in length with coupling chains and shackles were purchased.

The following expenditures have been incurred for staff, maintenance, repairs and improvements during the fiscal year :—

Staff and maintenance	\$ 8,217 26
Repairs and improvements :—	
Grandes Piles Station	1,069 56
Grand Mère do	145 76
Shawenegan do	4,050 35
Three Rivers do	10,089 89
Total	\$23,572 82

If we establish a comparison between the expenses and the revenue of this year and those of the past ten years, the result will be as per following :—

STATEMENT showing the number of logs, the gross revenue, the expenditure for staff, management, repairs, and construction ; also the net revenue on the St. Maurice works during the eleven years from 1st July, 1887 to 30th June, 1898.

Year.	Number of Logs.	Gross Revenue.	Staff and management	Repairs and Improvements.	Total Staff and Repairs.	Net Revenue.	Deficit.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1887-88	213,740	4,246 17	16,943 92	18,243 52	35,186 44		30,940 37
1888-89	328,103	7,323 27	21,290 72	5,517 33	26,808 05		19,434 98
1889-90	197,365	4,242 18	13,957 09	4,753 76	18,710 85		14,468 67
1890-91	303,099	3,953 87	17,155 67	6,638 78	23,794 45		19,840 58
1891-92	282,738	4,520 50	15,658 83	4,332 75	19,991 55		15,475 08
1892-93	569,703	11,114 90	9,259 86	831 13	10,090 99	1,023 91	
1893-94	755,657	14,544 55	7,565 65	2,545 09	10,110 77	1,433 78	
1894-95	779,892	14,306 53	6,512 83	4,001 34	10,514 17	3,792 36	
1895-96	1,163,610	21,358 74	8,114 01	5,645 38	13,759 39	7,599 36	
1896-97	1,240,459	22,090 50	8,647 72	9,816 21	18,563 93	3,426 57	
1897-98	1,763,908	29,893 41	8,217 26	15,355 56	23,572 82	6,320 59	

## Department of Public Works.

No serious damage has been done to any of the works. The general wear and tear has, however, been considerable and many repairs will be required in 1898-99.

I have the honour to be, sir,  
Your obedient servant,

F. X. THOS. BERLINGUET,  
*Superintending Engineer.*

### REPORT ON THE TRENT AND NEWCASTLE DISTRICT WORKS.

(By R. B. ROGERS, Superintending Engineer.)

PETERBOROUGH, 19th December, 1898.

LOUIS COSTE, Esq.,  
Chief Engineer,  
Department of Public Works.

SIR,—I have the honour to submit the annual report on the works under my charge for the fiscal year ending 30th June, 1898.

The works under my supervision in this district are constructed for two purposes: Those constructed for the benefit of navigation and those constructed for the benefit of lumbermen. The former, such as locks and canals, are under the control of the Department of Railways and Canals, the latter, such as slides and booms together with the improvements of the river navigation, is under the charge of the Department of Public Works.

The works are situated along the River Trent and its upper waters between the Bay of Quinté on the south and Balsam Lake on the north, a distance of about 170 miles.

There is a large water-shed reaching as far north as the head waters of the Madawaska on the north and west comprising an area of over 2,000 square miles: the regulation of this water-shed has become a very important matter to navigation, to the descent of timber and the many industries located along the route.

The water throughout the season was about normal though the spring freshet was somewhat higher than usual, but it passed off without doing more than the usual amount of damage to the works.

The works are now in fair condition with the exception of Fenelon Falls slide which will be referred to later on. Most of the large works that are required for the running of logs are now built so that in future, unless other large works are erected for the lumbermen, the expenditure for maintenance and renewals will be smaller than for some years past.

The following repairs were executed at the different stations during the year:—

#### FENELON FALLS.

The substructure of the slide at this station has not been in good condition for some years, but as it was necessary to change the location of the slide and the repairs necessary to put the foundation in a satisfactory condition would require a large sum, it was deemed advisable to allow the work to stand as long as it would and when necessary to place the slide in proper position. During the running of a drive last season a jam occurred on the slide and forced the sides of the slide out, and before the logs were stopped running the whole of the lower end of the slide below the Falls was taken out. As no appropriation was available for the purpose no attempt was made to rebuild the slide. A special report has been made giving an estimate and plan for replacing this slide.



BUCKHORN.

The north pier of the slide was extended 125 feet in order to prevent the saw-logs from jaming on the island. This extension has been a great help to the lumbermen and has made this one of the best running slides.

BURLEIGH.

The wing dam at the north side of the slide was planked and otherwise staunched. The bocms were so placed as to send the logs over the flat dam at the south side of the river where the logs run as well as can be desired.

KATCHAWANNOE LAKE.

The booms on Katchawannoe Lake were broken by the ice and some of the anchors were moved. The booms were repaired and the anchors replaced. This boom is a great protection to navigation and it would be impossible to keep navigation open without it.

LITTLE LAKE.

The boom in Little Lake was repaired by replacing some of the old boom chains with new.

PETERBORO'.

The platform over the slide was replanked and new corbels were placed under the platform timbers. The sheeting on the upper side of the piers was renewed.

OTONABEE RIVER.

The boom piers at the mouth of the Otonabee River, at Rice Lake, which stand on a sand foundation became undermined by the action of the water and canted over. The piers were taken down to water line and rebuilt.

JULIAN'S LANDING.

A grant of \$200 was made towards the construction of a landing pier at this place. The work was performed under the supervision of the district county councillor and a satisfactory job was done.

STATEMENT showing number of pieces of timber, &c., which passed over the different slides on the River Trent and Newcastle District Works, during the fiscal year.

Station.	Saw-logs.	Boom Timber.	Ties.	Posts.	Dimension Timber.
Heeley's Falls.....	30,488	1,893	9,884	26,781	
Lakefield.....	62,810	3,259	45,318	42,359	
Burleigh Falls.....	105,418	3,492	31,100	27,518	
Buckhorn.....	33,700	2,032	30,000	27,000	
Fenelon Falls.....	71,841	350	34,806	26,959	3,902

I have the honour to be, sir,  
Your obedient servant,

RICHARD B. ROGERS,  
*Superintending Engineer.*

## Department of Public Works.

### BRIDGES.

It may be stated that in the older provinces of the Dominion, the Federal Government has confined itself, as a rule, to take under its exclusive control and make provision towards the construction and maintenance of important interprovincial road bridges and bridges required across waterways.

In the sparsely settled districts of the North-west Territories, the Government of Canada has undertaken to provide for the erection and maintenance of ordinary road bridges over large streams ; bridges that are urgently needed to afford uninterrupted communication through trails and highways of national importance, which neither the municipalities [to be more immediately benefited by the structures, nor the territorial authorities most directly concerned could be expected to erect and maintain at their sole expense.

During the fiscal year the substructure of the Edmonton traffic bridge, across the north branch of the River Saskatchewan, at Edmonton, N.W.T., was completed.

Works of repair and improvement were carried out as usual on the various bridges and approaches in the city of Ottawa, the maintenance of which devolves on the Federal Government, viz. ; the bridges over the slides at the Chaudière Falls, with roadways in connection with same ; Union Bridge over the Ottawa, Dufferin Bridge, Sappers Bridge and Maria Street Bridge across the Rideau Canal.

A detailed account of these renewals, repairs, &c., is contained in the report of the superintending engineer, Ottawa River works, given in extenso, under the heading of "Slides and Booms".

Repairs were also made to Pond Creek bridge, a small wooden bridge in the county of Wright, Quebec, and to the following road bridges in the North-west Territories ; the Battle River Bridge, at Battleford ; the Langevin Bridge, at Calgary ; the old Man's River Bridge, at Macleod ; and the Bow River Bridge, at Banff.

### POND CREEK.

Pond Creek is the outlet of Leamy's Lake and flows in the Ottawa River half a mile above the mouth of the Gatineau River.

In 1894, a contract was entered into for the building of a wooden bridge 235 feet long over this creek.

It was completed in May, 1895, at a cost of \$3,726.26.

During the fiscal year ended 30th June, 1898, an expenditure of \$210.01 was made in repairs to the flooring.

### BURLINGTON BRIDGE.

In 1895-96 the Dominion Government determined to proceed vigorously with the construction of an iron swing bridge across the Burlington Channel, with a view of providing, without further delay, for the accommodation of the public, such improved expeditious and convenient means of communication from shore to shore as the large increase in the traffic at this point demanded, in place of the antiquated mode of conveying vehicles and passengers from one side of the channel to the opposite on a ferry scow or punt. This bridge was completed in November, 1896, and the amount expended on contract work and other works in connection, including the superintendence, is \$41,690.68.

This amount includes \$1,500 paid to the Dominion Bridge Company for supplying and installing an electrical apparatus for operating the swing span, and a sum of \$400 was expended for plans and inspection of superstructure, &c. The motive power is supplied by the Hamilton Radial Electric Railway Company.

During the present fiscal year, automatic gates to regulate the traffic at the approaches have been erected. Telephone communication has been made with the "power house," and a "power indicator," for the information of the man in charge, has been placed in the bridge house.



The expenditure during the year is as follows ;

Wages, staff on swing bridge.....	\$1,618 25
Gates, lamps, &c.....	350 60
Telephone and indicator .....	31 50
Supplies for bridge, &c.....	218 65
Labour, &c.....	301 58
Total.....	<hr/> \$2,520 58

A "storage battery" is urgently required in connection with the bridge.

#### GRAND RIVER BRIDGE.

Grand River, or York bridge, in Haldimand County, spans the Grand River about half way between Caledonia and Cayuga. It is composed of four spans with a total length of 425 feet, and has an approach on the west side 940 feet in length.

[ This bridge was built in 1890-91, and has never since been painted. It is in a very rusty condition.

Total expenditure during fiscal year :

Wages of caretaker.....	\$25 00
Slight repairs to approach.....	7 50
Total.....	<hr/> \$32 50

#### BATTLE RIVER BRIDGE—BATTLEFORD.

The Battle River Bridge spans the Battle River at Battleford, N.W.T., in the District of Saskatchewan.

Battleford is situated at the junction of the North Saskatchewan and Battle Rivers.

The bridge was constructed in 1890 by day's labour, after the contract let to Messrs. Heney and Kennedy was taken out of their hands.

The bridge consists of one Howe truss span 150 feet long ; two spans of 70 feet each, and a trestle approach at the north end.

During the fiscal year, a sum of \$271.83 was applied in tightening up the truss rods, in making minor repairs to the flooring, &c.

#### BOW RIVER BRIDGE, (BANFF, ALBERTA).

The Bow River Bridge crosses the Bow River, at Banff, Alberta.

Banff is a small town situated on the eastern slope of the Rocky Mountains on the C.P.R. line, and in the national park, of the same name, maintained by the Dominion Government. It is principally visited by tourists, has a sanitarium and good hotel accommodation on the north side of the Bow River.

The bridge, which was constructed by the Department of the Interior, in 1887, is the only means of access from the railway station to the sanitarium, to the Canadian Pacific Railway Company's hotel, and to the hot springs.

The bridge is a steel structure 360 feet long, consists of four spans of 90 feet each ; three intermediate random stone masonry piers, each 26 feet long, 10 feet high, and 7 feet wide at base ; and two stone abutments, each 28 feet long and 7 feet high with wing walls at the back.

In January, 1898, the piers and abutments were reported to be in a bad state of repair.

Owing to poor foundations and settlement, the masonry was observed to be cracked in several places and in all directions, some of the cracks being over 1 inch in width.

## Department of Public Works.

The south pier was considered specially in a dangerous condition.

The method of repairs proposed and now being carried out was to build timber cribs around the masonry, from firm foundation, with a breakwater nose upstream, the cribbing to be loaded with rock and held tightly on each side of the masonry by iron tie rods passing through crib and masonry.

It was also proposed to lift the superstructure 3 feet to keep the drift, trees, &c., from striking the floor beams during the spring floods.

These repairs were taken in charge by the department and during the present fiscal year the sum of \$949.79 was applied as follows :

1. Raising and levelling up the south span : 2. Building cribwork around both the south pier and south abutment, securely bolted through the masonry. The cribbing projects about 12 feet beyond the upstream, and  $6\frac{1}{2}$  feet beyond the down stream ends of the masonry pier ; 12 inches by 12 inches double bridge seats covered with white lead and laid in cement and new corbels and floor beams to support the roadway and sidewalk were put in.

In taking off the soil in which the plates and shoes of the south abutment were embedded, it was found they were resting partly on the river bank thus necessitating the building of small concrete piers under each bed plate to form bridge seats in addition to the cribbing.

It is proposed to continue the repairs to the other piers so soon as the water in the river is low enough.

### EDMONTON BRIDGE.

Edmonton is on the north side of the North Saskatchewan River, in the District of Alberta, N.W.T., situated on the high table land above the deep valley of the Saskatchewan, about 192 miles North of Calgary.

On either side of the river the higher plateau is at an elevation of about 190 feet above the river level, and the slope toward the lower plateau or narrow valley is very sharp.

On the south side of the river, opposite the town of Edmonton, is " South Edmonton ", the terminus of the Calgary and Edmonton Railway, (operated by the Canadian Pacific Railway Company) from which all freight for Edmonton and the northern districts has to be taken across the river on scows or ferries and during the seasons of running ice and high water at a great disadvantage and sometimes not without danger to life and property.

In 1892 a survey was made by the Dominion Government to select a site for a traffic bridge across the Saskatchewan at Edmonton. The location of the bridge was fixed nearly opposite the centre of the town where roads leading to the foot of the hills existed or could easily be built. It was intended to build only a highway traffic bridge, and the location was made with this end in view ; subsequently, the town of Edmonton, offered a contribution of \$25,000 towards its construction on condition that the Government would build a combined railway and traffic bridge. This was accepted and plans ordered.

Tenders were called for the substructure or masonry work in July 1897 and the contract awarded to François Lemoine of Montreal 17th August, 1897, for the bulk sum of \$36,500, not including piles in foundation, which were to be paid, as per schedule price, \$1 per lineal foot in the work.

The work under contract comprised the building of three piers and two abutments, piling in foundations, rip-rapping, and road approaches on both sides.

Work commenced early in September 1897, but was stopped, 9th Nov., for the winter. It was resumed 27th March, 1898 and completed 20th June.

The piers and abutments which are made entirely of concrete are 173 feet 8 inches distant, centre to centre. They are of rectangular section, and at the top carry a cap of cut stone for the bridge girder plates. At the base upstream and downstream ends are rounded and the ice cutter brought up with a slope of 1 to 1.

The smallest section at the top is 7 x 24 feet, and the largest section at the base 9.3 feet by 35.3 feet. The caissons have a width of 14.5 feet, and an extreme length



of 52.5 feet, the foundation area being 656 square feet. The average total height of the piers above foundation bed is 38 feet, and above low water level 30 feet.

The piers are founded below the alluvial gravel deposit made by the river on indurated clay, permanent in character, and is the same material which forms the foundation of the bluffs adjoining the river. This material is called by the miners, hard pan or country rock. It varies very much in hardness, some spots being found relatively soft, others as hard as shale; excepting the hardest variety, it crumbles to pieces when exposed to the air.

*North Pier.*—Five feet in depth of drift gravel was removed at the north pier or a total of about 250 cubic yards. At that depth 7 feet below extreme low water level a hard stratum of clay shale was reached. After testing it proved to be only a thin crust, about 8 inches in thickness, underlaid by ordinary clay.

Piles were ordered for the foundations. The caisson was first sunk into place and piles driven inside to a very hard stratum. They were then cut off 5 feet below low water level and the caisson filled in solid with Portland cement concrete from the hard pan bottom.

*Centre Pier.*—About 250 cubic feet of drift gravel was removed from the foundation pit, to a depth of  $7\frac{1}{2}$  feet of water, the depth of gravel averaging 5 feet.

This gravel was underlaid by a hard stratum of indurated clay, or clay shale. Borings at different places inside the foundation area did not show any soft stratum or soft pocket and this material after testing was proved to be perfectly safe for the foundation of the pier.

*South Pier.*—The depth of the drift gravel averaged only 6 inches and the quantity of material removed about 25 cubic yards.

The stratification there was about the same as at the north pier, though generally harder. Piles were ordered and driven in the same way as described for the north pier; 67 piles were driven in each of these piers.

*Caissons.*—Caissons for the three piers were made of 12 in. x 12 in. British Columbia fir timber. All joints were caulked and when sunk into place, clay was deposited outside and rammed round the base of the caissons. Concrete filling was then started, and the concrete deposited under water to a depth of about 3 feet with a specially constructed box.

After allowing 3 days for the setting of this layer, the caissons were pumped out and the concrete continued up to low water level, in the dry, well rammed and packed under the cross ties, and over the top of piles.

The body of the pier proper was started at low water level and carried up in a timber casing. Tongued and grooved boards were used to mould the straight faces, and thin sheet iron supported by scantlings for the end curves.

*Abutments.*—About 450 cubic yards of earth excavation removed from the foundation pits, and 45 piles for each abutment driven down to firm stratum.

These were cut off 6 inches above formation level and a strong grillage laid on top. The concrete was well rammed around the head of the piles and between the pieces composing the grillage. No timber was left exposed.

*Concrete.*—Proportions and ingredients for the concrete were measured by volume, a barrel of cement being taken as unity.

The proportions were as follows:

1 Portland cement;  $1\frac{3}{4}$  to 2 of sand; 5 of broken stone, (size  $2\frac{1}{2}$  in.)

A special finer concrete used for the facings was as follows:

1 Portland cement;  $1\frac{1}{2}$  sand; 4 broken stone (size  $1\frac{1}{2}$  in.)

The facing and backing were carried at the same time in the same layers.

Before placing the concrete for facing, cement mortar of 1 cement to 1 sand was spread over the previously deposited layer, close to the boards forming the casing. The concrete was then deposited, worked with the shovel and rammed, forcing the cement mortar along the face of the mould and filling in all voids. In this way the facing was very successful, showing after the removal of the timber casing, a smooth, dense surface without pits or irregularities.

## Department of Public Works.

Before beginning a new layer the concrete already set was well scraped, swept and thoroughly wetted.

During hot weather the fresh concrete was always protected from the direct rays of the sun by wet canvas sheets and sprinkled from time to time.

*Cement and Cement Testing.*—The work was entirely done with Portland cement. One thousand barrels of the “Josson” brand or Belgian cement, and twelve hundred barrels of the “Samson” brand, or Owen Sound cement, were used in the work. Out of this number 12 barrels were rejected.

The tensile strength for most of the briquettes made, after nine days immersion in water, was over 500 lbs. to the square inch, the briquettes having been previously allowed to set for 18 hours before immersion.

Quite a number of tests gave a strength of over 650 lbs. to the square inch at that age.

These tests were highly satisfactory when it is considered that they were made without all the care taken in laboratories, and without any extra ramming for compactness, and when frost at night was quite frequent.

Tests of briquettes, 1 cement to 2 sand, were also satisfactory, both as to their tensile and crushing strength.

*Rip-rapping.*—About 300 cubic yards of rip-rap stone was deposited around the caissons.

### APPROACHES.

*North Approach.*—This approach consists in a filling 150 feet long and 20 feet in width at top. Its greatest height is  $10\frac{1}{2}$  feet where it connects with the abutment. The material used for filling is a mixture of coal refuse and clay.

Right of way was secured for this approach by the town of Edmonton from the owners, for the sum of \$100.

*South Approach.*—This approach consists in a cutting 150 feet long and 20 feet in width at the bottom, the greatest height of the cut being 5 feet.

Right of way 66 feet wide and 200 feet long was transferred by the owners to the town of Edmonton free of charge.

The total expenditure during the fiscal year ended June 30th, is as follows:—

Contract price for piers, abutments, rip-rapping, caissons, approaches, &c . . . . .	\$36,500 00
Piles in foundations, $3,549\frac{3}{4}$ lineal feet at \$1 per lineal foot, as per schedule price . . . . .	3,549 75
Lumber in grillage for abutments, 5,042 F.B.M. at \$30 (schedule price) . . . . .	151 86
Additional height of 2 feet to piers and abutments (concrete) . . . . .	1,500 00
Superintendence, inspections, travelling expenses, &c . . .	1,867 53
Total . . . . .	\$43,569 14

At the close of the fiscal year, plans and specifications for the steel superstructure were almost ready, and it was intended to call for tenders in a short time.

### • LANGEVIN BRIDGE.—(CALGARY, ALBERTA.)

The Langevin Bridge spans the Bow River at the town of Calgary, Alberta.

Calgary is the principal town and railway centre of the district of Alberta. It is the starting point of the Calgary and Edmonton Railway to Edmonton, and of the Canadian Pacific Railway branch to Macleod. It is also a division station of the Mounted Police. Population about 5,000.

The bridge is a Howe truss timber structure about 370 feet long, exclusive of trestle approaches, and consists of three spans of 100 feet each; two intermediate piers



of cribwork, 33 feet by 12 feet at the base and about 17 feet high, and two abutments of similar construction 22 feet by 15 feet at the base.

The structure was built under contract in 1890 ; its apron is about 18 feet above low water level and  $6\frac{1}{2}$  feet above high water level of the Bow River.

During the present fiscal year, a sum of \$374.14 was expended in making sundry repairs on bridge and approaches.

‘OLD MAN’S RIVER BRIDGE—(MACLEOD, N.W.T.)

The Old Man’s Bridge crosses the Old Man’s River, about two miles west of the town of Macleod, Southern Alberta.

Macleod is the principal trading town of a large district of horse and cattle ranches, and is a division station of the Mounted Police. It is connected by a branch line of the Canadian Pacific Railway, 105 miles in length, with the main line at Calgary, and will be connected with the Crow’s Nest Pass Railway, now nearing completion.

The bridge was built under contract with Messrs. John Heney and Henry Smith of Ottawa, was commenced in May and completed in December, 1891.

The bridge consists of two spans of 150 feet each, one pier, two abutments and an earth and trestle approach on the south side. Since its completion this bridge has undergone various repairs at different times, such as rip-rapping round the piers twice, protecting south bank by hand laid stone, trussing up bridge three times, etc.

The traffic over the bridge has greatly increased since the construction of the branch line from Calgary, the terminus of which is not in the town but on the opposite side of the river, and since the construction of the Crow’s Nest Pass Railway was commenced.

All the traffic has therefore to pass over the bridge, which is a wooden structure, and it is much abused by ranchers, etc., who invariably race their bands of horses and cattle over it. In consequence of this, more than heavy strain, it may be assumed that an annual expenditure of at least \$500 will be required to keep the bridge in proper shape, till the present wooden superstructure can be replaced by one of steel.

During the fiscal year a sum of \$579.35 was expended in general repairs to the planking, trussing up, tightening screw bolts, etc., so as to render the bridge safe for the heavy traffic which has to pass over it.

Department of Public Works.

SURVEYS, EXAMINATIONS AND INSPECTIONS.

The following places or works were visited by the engineers for the purpose of inspection, examination or survey during the fiscal year ended 30th June, 1898 :—

NOVA SCOTIA.

Name.	County.	Name.	County.
Barrington Head.....	Shelburne.	Merigomish Big Island .....	Pictou.
Bass River.....	Colchester.	McNutt's Island.....	Shelburne.
Bayfield Breakwater . . . . .	Antigonish.	Meteghan.....	Digby.
Bear River.....	Digby.	Monday Point Wharf.....	Cape Breton.
Big Bras D'or Wharf.....	Victoria.	Morden.....	King's.
Big Lorraine.....	Cape Breton.	Moydart .....	Antigonish.
Big Pond Wharf.....	"	McNair's Cove.....	"
Brooklyn.....	Queen's.	North East Harbour .....	Shelburne.
Canada Creek.....	King's.	North Side East Bay .....	Cape Breton.
Canning.....	"	Nyanza Wharf.....	Victoria.
Caribou Island.....	Pictou.	Ogilvies.....	King's.
Chezzetcook.....	Halifax.	Pictou Light Beach.....	Pictou.
Clarke's Harbour .....	Shelburne.	Port Joli.....	Queen's.
Cow Bay Breakwater.....	Cape Breton.	Port L'Hebert.....	"
Cribbins Point Wharf.....	Antigonish.	Port Latour.....	Shelburne.
Digby .....	Digby.	Port Lorne.....	Annapolis.
East Bay Wharf.....	Cape Breton.	Port George.....	"
East Jordan.....	Shelburne.	Port Maitland.....	Yarmouth.
Eastern Passage .....	Halifax.	Porter's Lake.....	Halifax.
East Ragged Island. ....	Shelburne.	Pubnico.....	Yarmouth.
Grand Etang .....	Inverness.	Pugwash.....	Cumberland.
Gunning Cove .....	Shelburne.	Red Head .....	Shelburne.
Hantsport.....	Hants.	Ross's Ferry Wharf.....	Victoria.
Harbour au Bouche.....	Antigonish.	Sanford.....	Yarmouth.
Hunt's Point .....	Shelburne.	Shag Harbour.....	Shelburne.
Irish Cove Wharf.....	Cape Breton.	Short Beach .....	Yarmouth.
Island Point Wharf.....	Victoria.	St. Mary's River .....	Guysboro'.
Kelly's Cove .....	Yarmouth.	Three Fathom Harbour.....	Halifax.
La Have River.....	Lunenburg.	Tracadie Harbour .....	Guysboro'.
L'Ardoise Breakwater.....	Richmond.	Trout Cove.....	Digby.
Lewis Head .....	Shelburne.	Victoria.....	King's.
Liverpool .....	Queen's.	Wallace.....	Cumberland.
Livingston Cove .....	Antigonish.	Windsor .....	Hants.
Lockeport.....	Shelburne.	West Arichat.....	Richmond.
Lower Jordan Bay .....	"	Whitewater.....	King's.
Mabou Railroad Crossing.....	Inverness.	White Point.....	Shelburne.
Maitland.....	Hants.	Yarmouth.....	Yarmouth.
Marble Mountain.....	Inverness.	Whycocomagh Wharf.....	Inverness.
Magaretville.....	Annapolis.		

PRINCE EDWARD ISLAND.

Annandale Pier .....	King's.	Naufrage Pond.....	King's.
French River.....	Queen's.	Skinner Pond.....	Prince.
Graham's Pond.....	King's.	Souris Harbour.....	King's.
Gordon's Point .....	Prince.	St. Peter's Harbour.....	"
Higgins' Pier .....	"	Pinette Harbour.....	Queen's.
McGee's Pier.....	"	Tignish Harbour .....	Prince.
Murray River.....	King's.	Vernon River Pier. ....	Queen's.



NEW BRUNSWICK.

Name.	County.	Name.	County.
Anderson's Hollow.....	Albert.	Kingston.....	Kent.
Baie Verte.....	Westmoreland.	Mispec.. ..	St. John.
Buctouche.....	Kent.	Mizzenette.....	Glouceste
Burton (R. St. John).....	Sunbury.	Negro Point.....	St. John.
Cape Tormentine.....	Westmoreland.	Oromocto (R. St. John).....	Sunbury.
Caraquette.....	Gloucester.	Partridge Island. ....	St. John.
Chipman (R. St. John).....	Queen's.	Quaco.....	"
Clifton.....	Gloucester.	Salmon River.....	Queen's.
Cocagne.....	Kent.	Shediac.....	Westmoreland.
Cole's Point.....	Westmoreland.	Shippegan.....	Gloucester.
Courthouse (R. St. John).....	Sunbury.	Stony Creek.....	Albert.
Dalhousie.....	Restigouche.	St. Andrews.....	Charlotte.
Fort Dufferin.....	St. John.	St. Francis (R. St. John). ....	Madawaska.
Grande Anse.....	Gloucester.	St. John.....	St. John.
Grand Falls (R. St. John).....	Victoria.	St. Stephens.....	Charlotte.
Grimross Canal (R. St. John).....	Queen's.	Tobique (R. St. John).....	Victoria.
Herring Cove.....	Albert.	Two Rivers.....	Albert.
Jemseg (R. St. John).....	Queen's.	Tynemouth Creek.....	St. John.

QUEBEC.

Cannes de Roches.....	Gaspé.	Saguenay River.....	Chicoutimi.
Cross Point.....	Bonaventure.	Salmon River.....	Huntingdon.
Etang du Nord.....	Magdalen Island.	Sandy Bay.....	Rimouski.
Grosse Roche.....	Rimouski.	St. Anicet.....	Huntingdon.
Isle Perrot.....	Vaudreuil.	St. Rock des Aulnaies.....	L'Islet.
New Port.....	Gaspé.	Ste. Anne de la Pérade.....	Champlain.
Notre Dame du Lac.....	Témiscouata.	St. Michel de Bellechasse.....	Bellechasse.
River du Loup.....	Témiscouata.	Ste. Luce.....	Rimouski.
River Touladie.....	Témiscouata.	Ship channel, St. Lawrence River	Between Montrea and Quebec.

ONTARIO.

Adolphustown.....	Lennox.	Pickering.....	Ontario.
Bayfield.....	Huron.	Picton.....	Prince Edward.
Bowmanville.....	Durham.	Port Hope.....	Durham.
Bruce Mines.....	Algoma.	Port Finlay.....	Algoma.
Cobourg.....	Northumberland.	Providence Bay.....	"
Desbarats.....	Algoma.	Rainy River.....	"
Honora Bay.....	"	Richard's Landing.....	"
Hawkesbury.....	Prescott.	Rondeau.....	Kent.
Kingston.....	Frontenac.	Severn River.....	Muskoka.
Newcastle.....	Northumberland.	South Nation River.....	Prescott.
North Bay.....	Nipissing.	Whitby.....	Ontario.
Oshawa.....	Ontario.		

MANITOBA.

Fairford River.....	Lisgar.	White Mud River.....	Marquette.
Mouth of Red River.. ..	Selkirk.	West Slough.....	Selkirk.

NORTH-WEST TERRITORIES.

Banff.....	Alberta.	Lethbridge.....	Alberta.
Galgary Mission Bridge.....	"	Macleod.....	"

Department of Public Works

BRITISH COLUMBIA.

Name.	County.	Name.	County.
Fraser River.....		Nanaimo Harbour.....	Vancouver.
Stikine River.....		Vancouver Harbour .....	New Westminster.

During the year 1897-98, 910 official papers were referred by the Secretary of the department to the Chief Engineer's office for report or action. Over 10,000 letters were received from the resident engineers and others, and 4,696 were sent out,

LOUIS COSTE,  
*Chief Engineer, Public Works of Canada.*





Department of Public Works.

PART V

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REPORT ON GOVERNMENT TELEGRAPH LINES

FOR THE

FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1898





Department of Public Works.

TELEGRAPH SERVICE OFFICE,  
OTTAWA, 14th December, 1898.

SIR,—I beg leave to submit herewith my report on the Government Telegraph Service for the twelve months ended 30th June, 1898.

The report, similarly to last year's, is prefaced by a list to date, of the land lines and cables in operation; with data of lengths, year of construction, number of offices at present established, and an estimate of the traffic obtaining.

The usual tabular statements giving lists of the offices, operating staff, &c., in the several districts are appended to the report; likewise the tariff sheets, giving the rates charged for messages on the several lines.

I have the honour to be, Sir,

Your obedient servant,

D. H. KEELEY,  
*General Superintendent.*

E. F. E. ROY, Esq.,

Secretary, Department Public Works.



GOVERNMENT TELEGRAPH SERVICE.

Location of Lines.	Points connected.	Year.	LENGTH OF LINES.			Number of Offices.	Yearly Average of Mes-sages Sent.
			Land Lines.	Cables.	*Total.		
			Miles.	Knots.			
Newfoundland..	Port au Basque—Cape Ray.....	1883	14	.....	14	2	.....
Nova Scotia ..	North Sydney—Meat Cove (with loops)	1880-98	147 $\frac{1}{4}$	.....	148 $\frac{1}{4}$	13	5,700
do	do Across Bras d'Or Channel.....	1880	.....	$\frac{1}{2}$			
do	do St. Ann's Harbour.....	1887	.....	$\frac{1}{4}$			
do	do Ingonish Harbour.....	1887	.....	$\frac{1}{4}$	23	2	50
do	Meat Cove—St. Paul's Island.....	1890	.....	20			
do	On St. Paul's Island.....	1890	3	.....			
do	Mabou—Cheticamp.....	1887	63	.....	63	7	2,000
do	Parrington—Cape Sable.....	1883	16	.....			
do	do Across Bear Point Channel..	1883	.....	1 $\frac{1}{2}$			
do	do Lt. House Channel..	1883	.....	$\frac{1}{4}$	17 $\frac{3}{4}$	3	450
New Brunswick.	Chatham—Escuminac.....	1885	42	.....	42	5	750
do	Bay of Fundy System :						
do	do Eastport—Campobello.....	1880	.....	1 $\frac{3}{4}$	44 $\frac{1}{4}$	8	600
do	do On mainland Eastport..	1880	$\frac{1}{2}$	.....			
do	do On Campobello Island.....	1880	7 $\frac{1}{2}$	.....			
do	do Campobello—Grand Manan ..	1880	.....	7 $\frac{1}{4}$	25 $\frac{1}{4}$	.....	.....
do	do On Grand Manan Island .....	1880	25 $\frac{1}{4}$	.....			
do	do Grand Manan—Cheney's Is-land...	1890	.....	$\frac{1}{2}$			
do	do On Cheney's Island.....	1890	$\frac{3}{4}$	.....	92	6	.....
do	do Cheney's Island—Whitehead Island.....	1890	.....	$\frac{3}{4}$			
Quebec.....	Bay St. Paul—Chicoutimi.....	1881	92	.....	92	.....	.....
do	Branch St. Alexis to L'Anse St. Jean	1898	40	.....	40	1	.....
do	Murray Bay—Big Romaine.....	1881-98	628 $\frac{1}{2}$	.....	667 $\frac{3}{4}$	40	18,400
do	do Across Saguenay River.....	1883	.....	1 $\frac{1}{4}$			
do	do Bersimis to Manicouagan.....	1883	.....	12			
do	do Manicouagan to Godbout.....	1883	.....	26	13	.....	.....
do	Quarantine System :						
do	do Quebec—L'Ange Gardien.....	1885	.....	.....			
do	do L'Ange Gardien- Orleans Is-land .....	1885	.....	$\frac{3}{4}$	52 $\frac{3}{4}$	7	3,400
do	do On Orleans Island.....	1885	29 $\frac{1}{4}$	.....			
do	do Orleans Island—Isle Réaux...	1889	.....	2			
do	do On Isle Réaux.....	1889	2 $\frac{1}{2}$	.....	2	.....	.....
do	do Isle Réaux—Gross Isle.....	1889	.....	2			
do	do On Grosse Isle (all told).....	1885-94	3 $\frac{1}{4}$	.....			
do	Anticosti System :				28	.....	.....
do	do Gaspé—L'Anse à Fougère...	1881	.....	.....			
do	do L'Anse à Fougère—Anticosti.	1881	.....	44 $\frac{1}{4}$			
do	do On Anticosti Island .....	1881-90	223 $\frac{1}{4}$	.....	21	.....	.....
do	do Anticosti—Long Point, Mingan	1890	.....	.....			
do	do Meat Cove (C.B.)—Magdalen Is-lands .....	1880	.....	55			
do	do On Magdalen Islands.....	1881	83	$\frac{1}{2}$	138 $\frac{1}{2}$	9	500
Ontario.....	Pelee Island System :				12	.....	.....
do	do Leamington—Point Pelee ...	1889	.....	.....			
do	do Point Pelee—Pelee Island.....	1889	.....	9 $\frac{1}{2}$			
do	do On Pelee Island .....	1889-98	12 $\frac{1}{2}$	.....	607 $\frac{1}{2}$	15	4,200
North-west.....	Qu'Appelle—Edmonton and St. Albert.....	1883-87	607 $\frac{1}{2}$	.....			
do	do Moosejaw—Wood Mountain .....	1885	90 $\frac{1}{2}$	.....	90 $\frac{1}{2}$	2	250
British Columbia	Ashcroft—Barkerville .....	1878-87	276 $\frac{1}{2}$	.....	276 $\frac{1}{2}$	8	2,000
do	do Victoria—Cape Beale .....	1891	118	.....	118	7	250
do	do Nanaimo—Comox and Alberni....	1893-95	110 $\frac{1}{2}$	.....	110 $\frac{1}{2}$	8	2,500
do	do Ashcroft—Lillooet.....	1896	62	.....	62	1	500
Total .....			2,751 $\frac{1}{2}$	207 $\frac{1}{4}$	2,958 $\frac{3}{4}$	164	42,550

\* For convenience in totalling, the knots of cable are regarded as statute miles.

## Department of Public Works.

### REPORT ON GOVERNMENT TELEGRAPH SERVICE FOR 1897-98.

With few exceptions, the land lines and cables were kept in good order throughout the year. Such renewals and general repairs as were called for, are hereinafter noted in detail. *Where no reference is made to any particular line in this respect, it will be understood to have been free from interruption, and satisfactorily operative.*

The expenditure and revenue for each of the several lines will be found in a tabular statement at the conclusion of this report.

#### NEWFOUNDLAND.

The line from Port au Basque to Cape Ray continues to be operated as heretofore, under an agreement with the Anglo-American Telegraph Company.

#### MARITIME PROVINCES.

*Mabou-Cheticamp Line.*—The work of re-poling between Margaree and Cheticamp with cedar, referred to in last year's report, was completed in November, and practically makes a new line of that section. Provision was made last session for the re-poling of the remaining portion between Margaree and Mabou, a length of about 38 miles. As in this latter section, suitable native wood (hackmatack) is obtainable along the route, there is no necessity for bringing poles from a distance, as in the other instance; and it is proposed to get out the requisite supply in the course of the winter season, and have the work of renewal done next spring.

The office at *S. W. Margaree*, which had been in charge of Mr. Angus Collins since March, 1893, was transferred to Mr. J. D. McFarlane on the 1st February, 1898; and at *N. E. Margaree*, Miss B. M. Ross, agent-operator since January, 1889, was, on the 1st February, succeeded by Mrs. J. D. Ross.

*Barrington-Cape Sable Line.*—The application of the Barrington Telephone Company for a lease of this line, as mentioned in the year's report, was granted; and that system has been operated by the company since the middle of December, 1897. The yearly guaranteed commission is continued to the keeper of the Cape Sable lighthouse, in the interest of the signal service, for the operation of the connection maintained with that place. The considerations governing this arrangement are the same as those regarding the Low Point, C.B. telegraph office, explained in my annual report for 1892-93.

*Meat Cove Line.*—In consequence of the poles (spruce), between Ingonish and Meat Cove, 50 miles, which were renewed in 1890, having fallen into decay, steps are being taken to renew the section this season. As spruce is easily obtained along the route, a special supply of the more durable cedar poles, which could only be brought from a distance at three or four times the cost, is considered unwarrantable.

The loop line to *White Point*,  $7\frac{1}{4}$  miles, built in 1892, having latterly proved of no utility, was this season withdrawn; part of the wire and insulations recovered from it will be applied to the construction of a loop line to *Dingwall*  $2\frac{3}{4}$  miles off the main line, in the same neighbourhood.

Since the 1st April, 1898, the repairing of the Meat Cove line has been apportioned in sections amongst five residents along the route, in place of one regular lineman in charge of the whole, as was the case for several years previously. The staff and allotment of divisions will be found in the tabular statement (Cape Breton section), appended to this report.



The office at Port Bevis was closed for the winter, on the 15th December; re-opened in the month of April, 1898.

*Bay of Fundy Lines.*—The cable between Grand Manan and Campobello Islands, which had been interrupted from the 27th February till the 18th June, 1897, when it was repaired, was again interrupted on the 17th of the following month. The SS. "Newfield" was at the time engaged on repairs on the Magdalen islands cable, and was as early as practicable brought back to the Bay of Fundy, and this Grand Manan-Campobello connection was restored on the 31st of the same month (July, 1897). This latter interruption was found to have been due to a complete break, and bore evidence of having been broken on the narrow fluke of a vessel's anchor. Again on the 18th of June of the present year, 1898, this same cable ceased working.

NOTE.—The break on this occasion was subsequently found to have been caused by the anchor of a coal supply boat, off Long Eddy, dragging through it in a storm. The services of the "Newfield" were secured as early as practicable, and the repair was made on the 23rd August.

At *Welshpool*, the office was temporarily removed from the village premises to the Tyn-y-coed Hotel, for the summer months, July-September, 1897.

*Castalia*, a new office, with Mr. George E. Dalzell as agent-operator, was opened on the 1st June, 1898, for the convenience of residents at that place.

The telephone office at *Whitehead Island*, which had been in charge of the late Mr. E. Carroll from December, 1890, up to the time of his decease, has been removed to the premises of Mr. Irwin D. Harvey, who was appointed agent on the 1st June, 1898.

#### RIVER AND GULF ST. LAWRENCE.

*Anticosti Island Lines.*—The dual connection for exchange of business with the Great North-Western Telegraph Company, by the cables reaching Gaspé on the one hand, and the North Shore on the other, has afforded an advantageous alternative route for the handling of the North Shore traffic, on occasions of interruption of one or other of the lines reaching Quebec. The land lines on Anticosti have been kept in order, and repairs, when called for, have been promptly made. To obviate growing chances of trouble due to the land line wire having greatly deteriorated, the district superintendent is inquiring into the probable need for its renewal, at least in part, and it is proposed to ask that some provision for this purpose be made for next season.

*Magdalen Islands.*—The cable between Old Harry and the mainland at Meat Cove, C.B., concerning which a lengthy note was inserted in last year's report, was interrupted on the 25th April, 1898. The trouble was found to have been due to heavy ice pounding on the shore—where the cable lands—at Meat Cove. The damaged part was cut out, and a temporary but effective repair made by the local agent, Mr. A. B. McDonald, on the 5th May. Five days later, however, this cable again became inoperative, and examination made showed nothing wrong near the shore. The trouble was at first thought to be on the land line connection, at the Magdalen Islands; but on the 15th the local agent at Meat Cove received word that a schooner had run foul of the cable, on the 10th, about six miles off the headland, and had sacrificed her anchor and chain with a view to saving the cable, but had probably broken the core.

NOTE.—This subsequently proved to be the case. The SS. "Newfield," after attending to the Bay of Fundy repair, already mentioned, proceeded to Meat Cove and picked

## Department of Public Works.

up the cable. Some of the iron armour wires were still intact, so there was no need for grappling at the break. The core was exposed and broken up for a length of about 300 feet, where the anchor had caught it. Communication was restored with the Magdalen Islands on the 10th September, 1898.

N.B.—It may be mentioned here, that these interruptions and repairs of the Old Harry-Meat Cove cable have in no way altered the conditions existing at the time of writing my last year's report. The leak over towards the islands had not become more serious, and as the present season was too far advanced to make an attempt to remove it advisable, action to that end has been still further deferred.

*St. Paul's Island Line.*—There was a recurrence of last year's trouble in the cable connecting this island with the mainland, at Meat Cove, C.B. It gave out on the 26th February. On an examination being made at the Meat Cove landing, by the local agent, as in the case of the Magdalen Islands cable already mentioned, the trouble was found, the damaged part was cut out, and communication restored with St. Paul's on the 4th March. Three months later, however, on the 17th June, it began to give out again, and worked thereafter only intermittently. But as the shore end at Meat Cove was badly crushed and needed renewal; and as the "Newfield" was in requisition for repairs to the Magdalen Islands cable at this time; an attempt to make further local repairs was considered unwarrantable.

NOTE.—Subsequently, in the course of repairs to the Magdalen Islands cable, a new length of shore end was put down for a distance of 800 feet out from high-water mark; and alongside of it there was put in for the St. Paul's connection, an equal length of the special type locked-armour cable, imported for this purpose last year. It is to be seen whether the difference in type affords any comparative advantage in protecting the core from ice-crushing, where the shore ends are so subject to damage. On the introduction of this new length of shore end, communication was re-established with St. Paul's, on the 15th September. The circuit was, however, not entirely clear. Tests made, indicated a fault about seven miles off St. Paul's island, in deep water. It was thought well to leave it in that condition until a more convenient and favourable season for the kind of work required to clear it out.

*North Shore Lines.*—In the course of the present season, such work of re-poling as is called for, is being made in the section between Seven Islands and Pentecost, referred to in last year's report. Clearances have been made of the wooded St. Marguerite section, between Hall's River and May Islands, the only remaining uncleared portion of the line east of Godbout; and of the wooded section between Portneuf Mills and Bersimis, where of late a great deal of trouble was occasioned by falling trees. In making these clearances, the trees on either side of the line were cut down to such a distance, that none now falling can reach the line or obstruct the lineman's pathway. This is the condition now obtaining all along the line, and there is nothing but new growths liable to interfere with the wire in the wooded sections.

The office at *St. Etienne* was closed for the winter in November, owing to the temporary withdrawal of the operator, as in the previous year. It was re-opened on the 7th April, 1898.

At *L'Anse St. Jean*, an office was opened on the 1st August, 1897, with Mrs. R. Martel as agent-operator, on the completion of the new line to that place from St. Alexis, 40 miles, mentioned in last year's report.

At *Long Point* of Mingan, the department has purchased from Mrs. E. S. Vibert, the premises for some time past and at present occupied by the telegraphic service, as office and dwelling for the agent-operator. Long Point is the transfer point for the Anticosti cable, and a permanent repeating office has to be maintained there.

At *Sheldrake*, the office which was closed since January, 1896, was re-opened, on the 1st October, 1897, with Miss A. LeBerge as agent-operator.



*Construction.*—The further extension of the North Shore line towards the Straits of Belle Isle, is being proceeded with. Up to the close of the fiscal year, however, there were no offices established beyond Aguanus—noted in the last annual report.

NOTE.—This line, which was last reported as having reached a point six miles below Aguanus, has since been carried a further distance of 86 miles, to Big Romaine River, under renewal of contract with Mr. L. P. Decourval. Offices were opened for business at Natashquan, 16 miles below Aguanus, on the 16th September, 1898, with Miss E. Vignault as agent-operator; and at Big Romaine, on the 21st September, 1898, with Miss R. A. Blais as agent-operator. An office is to be opened at *Kagaska*, 43 miles west of Big Romaine, and 33 east of Natashquan, as soon as arrangements can be made.

*Quarantine Line.*—With a view to enabling the Bell Telephone Company to determine whether sufficient traffic was obtainable on the Island of Orleans, to warrant the extension of the company's system into that locality, the Grosse Isle quarantine line was equipped early in the year with telephonic apparatus, as well as telegraph. According to this arrangement at the several offices, either means of communication is made use of, as may be required by the agents in charge.

There was some trouble of a variable character experienced with the St. François-Isle Réaux cable in August and September, 1897, which on investigation proved to be due to the development of a fault occasioned sometime previously, by ice crushing just outside the locked-armour type of shore end, on the Isle Réaux side. It was found and put in order by the local repairer, Mr. N. Roberge. The same cable again gave out on the 26th January, 1898, and had to remain inoperative until the ice had passed down in the spring time. It was got at and repaired on the 27th April. The damage in this instance, caused by ice crushing at the juncture of the locked-armour and ordinary types, was on the St. François side.

At St. François, Mr. M. Emond, who had been in charge of the office since March, 1895, was succeeded by Mr. H. Lemelin, 1st November, 1897.

#### ONTARIO.

*Pelee Island Line.*—The cable connecting Pelee Island with the mainland, ceased working on the 15th February, 1898, and had to remain unrepaired until after the ice had passed down the lake in the spring time. It was decided to take the action contemplated last year, when the repair could be attended to, and, accordingly, as early as possible in June the newly imported length of  $2\frac{1}{2}$  knots deep-sea I. R. cable of heavier type than the original cable was laid from the Dummy Light, in a straight line towards Lizard Point, Pelee Island—this portion of the track being in the channel for the lake traffic, and more liable to be dragged over by vessels, than elsewhere along the new route. The whole length of the original cable ( $8\frac{3}{4}$  knots), was then in sections reeled up and overhauled, and so much of it as required was relaid. Two knots were put down on the east side of the sand-bar, between Point Pelee and the Dummy Light; and five knots between the end of the new cable and the landing place just below Lizard Point, on the island; a land line of one mile being constructed from the lighthouse at North Point to connect with it. One and one-quarter knots of the old cable in serviceable condition is left on hand; a half knot represents the aggregate length of numerous damaged portions cut out and discarded. The work was done by means of a steam barge and tug boat. It is now thought that the cable is in a position likely to be free from interference and permanently secure.

## Department of Public Works.

### NORTH-WEST.

*District Superintendency.*—On the 1st January, 1898, Mr. H. Gisborne, at Qu'Appelle Station, was succeeded by Mr. J. S. Macdonald, as district superintendent.

*Wood Mountain Line.*—Considerable damage was done in the course of the summer by lightning shattering poles on the Wood Mountain line. The damaged poles were replaced by some kept on hand at Moosejaw, in the event of such requirement. Some general repairs are being made this season, and the whole line is being maintained in reliable condition.

*Edmonton Line.*—Some pole re-setting, owing to decay of the bottom portions, has been done in several sections. More of the same kind of work will be done next year; and from present appearances it is believed the line will remain in good order for a considerable period. The upkeep of the whole has been satisfactory. As connection is made with the Canadian Pacific telegraph system at both ends of this line (Qu'Appelle and Edmonton), there is an alternative route for the traffic, and a single interruption or break down at any one point of the circuit, does not necessarily cut off communication.

At *St. Paul de Metis*, eighteen miles east of Saddle Lake, an accommodation office was opened on the 18th October, 1897. It is in operation only occasionally.

### BRITISH COLUMBIA.

*Victoria-Cape Beale Line.*—This line has been kept more continuously in working order for some time past, than was possible in previous years; still it is very liable to prolonged and frequent interruption, owing to the nature of the country through which it runs. The proposed alternative line from Alberni has received further attention in the course of the past year. A practicable route for it, skirting the canal, has been defined; the requisite material for the construction has been laid down at Alberni, and steps are about to be taken to have the work done.

At *Otter Point*, the office was resumed by Mr. E. Gordon on the 1st November, 1897. It had been in charge of A. H. Floyer for some months previously.

At *Jordan River*, J. Goudie succeeded L. Desbiens as agent-operator on 1st May, 1897.

At *Carmanagh*, D. Logan succeeded E. B. Daykin as repairer on 1st April, 1898. J. W. Irwin succeeded R. McDonald as repairer on 1st December, 1897.

*Barkerville Line.*—Owing to a growing frequency of interruptions, due to decay of poles along this line, provision will probably have to be made for the renewal of the whole next year. The poles now standing have already, for most part, been reset, and will not be much longer serviceable.

At *150-Mile House*, S. T. Hall succeeded W. Jamieson as agent-operator, 1st November, 1896.

*Nanaimo-Comox Line.*—At *Parksville*, the repeating office for the Alberni branch, Mr. and Mrs. D. McMillan were on 1st December, 1897, succeeded by Mr. and Mrs. George Williams as lineman and agent-operator respectively. Concurrently with the removal of the office incidental to this change, an obscure source of trouble rendered the Alberni branch temporarily inoperative. An expert operator was sent as early as practicable to investigate, but in the meantime the local agents got the line in working order, and it has been satisfactorily maintained since that time.



At *Union Mines*, owing to the location of the office in Mr. Dunsmuir's premises being found inconvenient for the residents of the village, a second office, *Cumberland*, was opened there in April, in the drug store of Mr. Albert Peacy. The former office was continued on as an accommodation office, with no expense attached.

At *Union Bay*, an office was established in June, with Mr. E. McDonald in charge as agent-operator. This place was formerly known as Union Wharf, and was, up to this time, reached by telephone from the office at Union Mines.

REVENUE AND EXPENDITURE.

The revenue and expenditure for each of the lines in the several districts hereinbefore mentioned are given in the following table:—

	Expenditure.	Revenue.	Remarks.
Lower St. Lawrence and Maritime Provinces—			
Anticosti Island lines.....	2,887 31	1,255 55	Signal Service messages, Meteorological Service messages and reports, and Fisheries bulletins are handled free of tolls.
Bay of Fundy ".....	3,293 91	696 82	
Cape Ray ".....	.....	.....	
Cape Sable ".....	153 68	1 69	
Cheticamp ".....	956 63	423 44	
Escuminac ".....	505 39	171 78	
Low Point Agency.....	54 15	.....	
Magdalen Island lines.....	4,754 25	634 44	
Meat Cove line (including St. Paul's Island).....	2,846 85	763 75	
North Shore St. Lawrence (East of Bersimis).....	3,758 34	1,262 09	
" " (West of Bersimis).....	3,898 55	956 95	
Quarantine line.....	804 74	487 15	
Cable ship "Newfield," renewals of plant.....	2,249 84	.....	
Subsidies, stationery, line and office material and contingencies, chargeable to appropriation for Gulf lines..	2,507 81	.....	
	28,671 45	6,653 66	
Ontario, Pelee Island line.....	1,061 98	136 68	
North-west Telegraph lines.....	14,353 22	2,129 91	
British Columbia, Comox (including Alberni line).....	3,990 83	1,830 40	
*Barkerville line.....	3,130 12	.....	
*Cape Beale line.....	4,154 50	.....	
	55,362 10	.....	
Telegraph Service generally.....	1,371 05	.....	
Total.....	56,733 15	10,750 65	

\* The C.P.R. operating these two lines, retains the revenue, and the Government reimburses them the excess of expenditure over revenue.

APPENDED TABLES.

The usual tabular statements of the lines and offices, staff, &c., appended to this report, will be found to contain whatever additions or changes have been made up to the 30th June last.

D. H. KEELEY,  
General Superintendent.

OTTAWA, 14th December, 1898.

GOVERNMENT TELEGRAPH SERVICE.

NEWFOUNDLAND TELEGRAPH SYSTEM.

No.	Stations.	Intermediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Port au Basque. ....	0	.....	50 00 or com'n.	.....	N.B.—The Commission is 25 per cent upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2	Cap Ray Lighthouse . . . . .	14	.....	50 00 "	.....	
	Total. ....	14		100 00 "		

N.B.—The above short line is constructed in connection with the Signal Service, and connects at Port au Basque with the land line system of the Anglo-American Telegraph Company.



ANTICOSTI TELEGRAPH SYSTEM.

Stations.		Intermediate Distances.	Agent and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	*Fox Bay .....	0	J. Stubbart.....	50 00	com'n Nov. 1, 1888.	The commission is 25 per cent on all business to and from the office in each instance ; and commission guaranteed not to be less than at the rate of \$50 per annum.
2	Heath Point Lighthouse.....	23	T. Gagné .....	50 00	do	* A special allowance for maintenance of office, \$50 per annum, has been added to the commission for offices marked *, since September, 1887.
3	South Point Lighthouse. ....	32½	A. Nadeau.....	50 00	do	
4	*Shallop Creek.....	17½	B. Bradley.....	50 00	do	General repairer. Plus \$1 per d. when absent on duty.
5	Salt Lake.....	52½	(Z. Beaudin, repairer... (A. Beaudin, operator...	365 00 50 00	do do	
6	South-west Point Lighthouse..	15	(Miss G. Pope..... (H. Pope, D. Supt.....	420 00 200 00	do do	Chief operator since 1st August, 1882. Plus \$1 per day when absent on duty.
7	Jupiter River.....	7	.....	50 00	do	
8	Otter River.....	17½	.....	50 00	do	Until July, 1896. The salary was \$50 with the special allowance for maintenance as above.
9	*Becsie River.....	22	Geo. Cabot.....	50 00	do	
10	Cape Eagle (Ellis Bay).....	10	.....	50 00	do	Until July, 1896. The salary was \$50 with the special allowance for maintenance as above.
11	West Point Lighthouse.....	9	A. Malouin .....	50 00	do	
12	English Bay.....	3	F. Cabot.....	120 00	and com. July 1, 1882.	
13	Mechastic Bay.....	14½	.....	.....	.....	
Totals.....		233½	.....	1,605 00	.....	
South-west Point connects with l'Anse à Fougère, Gaspé, by cable 4½ knots ; and from Mechastic Bay connection is made with Long Point of Mingan by cable 21 knots.						
1	L'Anse à Fougère.....	.....	N. Bernier.....	17 00	.....	Special allowance for the cable terminus. A testing station only.
2	Gaspé Basin.....	28	J. J. Annett.....	240 00	Oct. 16, 1881.	Transfer office. Connection with G.N.W. telegraph system.
		28	.....	257 00	.....	

## Department of Public Works.

## MAGDALEN ISLANDS SYSTEM.

## MAGDALEN ISLANDS SECTION.

No.	Stations.	Intermediate Distances.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Amherst .....	0	Miss J. Shea .....	50 00 or com'n.	Oct. 1, 1882	The commission is 25 per cent on all business to and from the office in each instance; said commission guaranteed to be not less than at the rate of \$50 per annum.
2	Amherst Lighthouse.....	9	Wm. Cormier.....	50 00 do	June 11, 1881	
3	Etang du Nord village.....	15	(P. Pelletier, lineman...)	400 00 do	Dec. 1, 1881	Plus \$20 per annum for rent.
4	Etang du Nord lighthouse.....	1	(Mrs. A. Binet.....)	50 00 do	do 1, 1881	
5	Grindstone Island .....	5	N. Arsenault .....	50 00 do	Sept. 1, 1891	Two-wire loop line.
			W. Leslie .....	Com'n 25 p.c.....	May 20, 1897	
6	Grindstone West .....		(A. LeBourdais, D. Spt. ...)	600 00	Aug. 17, 1880	Plus \$1 per day when absent on duty.
7	House Harbour ( $\frac{1}{2}$ knot cable) ..	3	(M's. E. LeBourdais, op. ...)	50 00	Sept. 15, 1893	
8	Wolfe Island.....	28 $\frac{1}{2}$	P. L. Joncas .....	50 00 or com'n.	June 1, 1888	
9	Grosse Isle.....	11	.....	.....	.....	
10	Grand Entry.....	11	N. Clark.....	200 00 and com'n.	June 1, 1888	
			Mrs. F. Atkins.....	50 00 or com'n.	Feb. 18, 1882	
	Totals.....	83 $\frac{1}{2}$		1,550 00		



GOVERNMENT TELEGRAPH SERVICE—Continued.

MAGDALEN ISLANDS TELEGRAPH SYSTEM.

CAPE BRETON SECTION.

Stations.	Intermediate Distances.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Miles.		\$ cts.		
1 Meat Cove (Cable station). . . . .	0	A. B. McDonald . . . . .	500 00	Nov. 7, 1880	The commission is 25 per cent on all business to and from the office in each instance; said commission guaranteed to be not less than at the rate of \$50 per annum.
2 Aspy Bay. . . . .	10½	I. Y. Nichols. . . . .	50 00 or com'n.	July 1, 1894	
3 Dingwall (loop line). . . . .	3¾	Murdoch McLeod . . . . .	50 00	Aug. 31, 1898	This loop line formerly running to White Point, has been withdrawn.
4 Neil's Harbour (½ way house). . . . .	2¾	M. McLeod . . . . .	50 00	April 1, 1887	
5 Ingonish, North Bay. . . . .	9	J. M. Burke . . . . .	50 00	1, 1882	
6 South Ingonish. . . . .	10½	F. C. Brewer . . . . .	50 00	1, 1891	
7 French River (¼ knot cable). . . . .	23	John McDonald . . . . .	50 00	Aug. 1, 1889	
8 Englishtown (¼ knot cable). . . . .	11	W. Bingham. . . . .	120 00	July 19, 1882	Switching point for Baddeck line.
9 South Gut, St. Ann's (on loop). . . . .	5	Miss T. Morrison. . . . .	50 00	Dec. 1, 1891	
10 Baddeck (on loop). . . . .	13	D. Dunlop . . . . .	50 00	Jan. 1, 1892	
11 Englishtown (back on loop). . . . .	18	. . . . .	. . . . .	. . . . .	This loop to Baddeck starts from and returns to Englishtown.
Port Bevis (2½ miles, looped off Baddeck line). . . . .	5	. . . . .	Commission only.	. . . . .	Construction of this loop line completed June, 1895.
12 Kelley's Cove (N. Campbellton). . . . .	6	Miss M. Campbell . . . . .	50 00 or com'n.	April 1, 1885	
13 Big Bras d'Or (½ knot cable). . . . .	2½	Mrs. E. Livingston. . . . .	50 00	Jan. 1, 1889	
14 North Sydney . . . . .	12½	W. U. Tel. Co. . . . .	Commission only.	. . . . .	The commission is 50 per cent on local business and 25 per cent on through messages; and covers supervision of line and office accommodation at North Sydney.
<i>Repairer's Sections.</i>					
Meat Cove—Sugar Loaf. . . . .		M. McAskill . . . . .	80 00	April 1, 1898	
Sugar Loaf—Ingonish. . . . .		Charles Smith . . . . .	80 00	" 1, 1898	
Ingonish—Englishtown. . . . .		R. A. McDonald. . . . .	80 00	" 1, 1898	
Englishtown—Baddeck. . . . .		D. Morrison. . . . .	60 00	" 1, 1898	
Englishtown—North Sydney . . . . .		T. Morrison. . . . .	60 00	" 1, 1898	
Totals . . . . .	148½		1,480 00		

Meat Cove station connects with the Magdalen Islands system by a cable to Old Harry Head, 55 knots, and with St. Paul's Island by a cable of 20 knots. The latter is operated with telephones.

GOVERNMENT TELEGRAPH SERVICE—Continued.

NOVA SCOTIA TELEGRAPH SYSTEM.

CAPE SABLE SECTION.

No.	Section.	Intermediate Distances.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Barrington .....	0				
2	Newellton (including 1½ knots cable) .....	11				
3	Cape Sable Island lighthouse (including 1¼ mile cable) .....	6¾				
	Totals .....	17¾				This line has been leased to the Barrington Telephone Company from the 12th August, 1897. The lease is terminable at any time.

EAST COAST SECTION.

N. B.—In connection with the Signal Service, a land line, 208 miles in length was erected in 1881, between Canso and Halifax, for a bonus of \$16,000, and is maintained and operated by the Western Union Telegraph Company, without further cost to the Government.



GOVERNMENT TELEGRAPH SERVICE—Continued.

MABOU-CHETICAMP, C.B., TELEGRAPH SYSTEM.

No.	Station.	Intermediate Distances.	Agent and Operator.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.				
1	Mabou.....	0	Mrs. M. McDonald.....	\$120 per annum...	April 1, 1887.	The commission is 25 p. c. of the Government line tolls, and is guaranteed to amount to not less than \$50 per annum. Where 50 p. c. commission is paid there is no guarantee as to amount.
2	Broad Cove.....	20	Mrs. Annie McLellan. . .	\$50 or commission.	March 1, 1892.	
3	S. W. Margaree . . .	12	J. D. McFarlane.....	Com'n 50 per cent.	Feb. 1, 1898.	
4	Margaree Harbour . .	5	H. K. McLean.....	\$50 or commission.	Oct. 20, 1896.	
5	N. E. Margaree (loop line wire)	10	Mrs. J. D. Ross.....	\$50 do	Feb. 1, 1898.	
6	Grand Etang.....	8	Joseph Doucette.....	Com'n 50 per cent.	April 23, 1893.	
7	Cheticamp . . . . .	8	Mrs. M. Fiset..... D. C. Dawson, D. Supt.	\$100 or commission \$150 per annum. . .	do 1, 1887. do 1, 1887.	
	Totals.....	63		\$520 per annum...		

CHATHAM-ESCUMINAC, N.B., TELEGRAPH SYSTEM.

1	Chatham.....	0	Great North-western Telegraph Co.....	\$185 00	.....	This amount is paid for supervision of the line and office accommodation at Chatham. The commission is 25 p. c. of the Government line tariff receipts in each instance, and is guaranteed to amount to not less than \$50 per annum.
2	Black Brook.....	5½	.....	50 00 or com'n.	.....	
3	Baie du Vin . . . . .	15	Miss M. Williston . . .	50 00 do	March 1, 1885.	
4	Lower Hardwicke . . .	6	Mrs. M. Brimmer. . .	50 00 do	Aug. 1, 1891.	
5	Escuminac.....	3½	D. Lewis . . . . .	50 00 do	Sept. 1, 1885.	
6	Point Escuminac lighthouse...	12	K. R. McLennan. . . . .	50 00 do	Nov. 1, 1893.	
	Totals.. . . .	42		\$435 00		\$12 per annum allowed for care of main battery at Point Escuminac.

GOVERNMENT TELEGRAPH SERVICE—Continued.

GROSSE ISLE QUARANTINE TELEGRAPH SYSTEM.

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
1	Quebec.....	Miles. 0	Great North-west'rn Telegraph Co.	\$ cts. 185 00	.....	This amount is paid for supervision of the line, and covers rent of pole line from Quebec to L'Ange Gardien, for which \$35 per annum is charged.
3	L'Ange Gardien.....	13 $\frac{3}{4}$	C. Turott ..	50 00 or com'n..	Mar. 1, 1885.	This commission is 25 per cent of the Government line tariff in each instance, and is guaranteed to amount to not less than \$50 per annum.
4	Orleans Island landing (cable). St. Pierre .....	4 $\frac{1}{2}$ 6 $\frac{1}{2}$	M. Plante..... M. Gobeil.....	50 00 do 120 00 and 25 p.c. commission. ....	April 7, 1896.	
5	St. Pétronille .....	7	P. Pouliot.....	120 00 and 25 p.c. commission. ....	Sept. 15, 1888.	
6	St. Laurent. ....	6 $\frac{3}{4}$	H. Lemelin....	50 00 or com'n..	July 1, 1888. Nov. 1, 1897.	
7	St. Jean .....	3 $\frac{1}{2}$	M. Langlois .....	50 00 do	Sept. 1, 1885..	\$12 per annum allowed for care of main battery at Grosse Isle.
8	St. François..... Isle Réaux (including 2 knots cable) .....	3 $\frac{1}{4}$ 2 $\frac{1}{2}$		.....	.....	NOTE.—The telephone system on Grosse Isle since May, 1893, has comprised 1 $\frac{3}{4}$ mile of 2-wire line, with 11 connections or stations.
	Isle Réaux (land line)..			.....		
	Grosse Isle quarantine office (including 2 knots cable).....			.....		
	Quarantine telephone system 2-wire line.....	1 $\frac{3}{4}$ 52 $\frac{3}{4}$		625 00		



BAY OF FUNDY, N.B., TELEGRAPH SYSTEM.  
GRAND MANAN SECTION.

No.	Sections.	Intermediate Distances.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Long Eddy Cable Hut, to</i>	Miles.		\$ cts.		
1	Flagg's Cove.....	3	Mrs. C. C. Seely (D. Supt.).....	420 00	Nov. 18, 1880.	The commission is 25 p. c., upon all business to and from the office in each instance; said commission guaranteed not to be less than at the rate of \$50 per annum. When 50 p. c. commission is paid there is no guarantee as to amount.
	do .....		Miss A. G. Watt.....	50 00 or com'n.	Jan. 1, 1895.	
	do .....		A. Gilmour, repairer ..	60 00	Dec. 1, 1894.	
2	Castalia .....	2½	G. E. Dalzell.....	Com'n 25 per cent.	June 1, 1898.	\$25 per annum is included for repeating White-head br. Southern Head office is now operated by telephone from Seal Cove.
3	Woodward's Cove. ....	3½	W. A. Fraser.....	do 50 do ..	Feb. 28, 1893.	
4	Grand Harbour. ....	2	J. L. Newton.....	75 00 or com'n.	Apr. 1, 1887.	
5	Seal Cove.....	4½	P. Russell.....	50 00 do ..	May 1, 1891.	
6	Southern Head Lighthouse	5½	O. McLaughlin.....	Com'n 25 per cent.	Apr. 24, 1897.	
	<i>Branch Line.</i>					
7	Grand Harbour.....	0	W. Cheney.....	Com'n 25 per cent.	Feb. 1, 1891.	
8	Cheney's Island (½ knot cable).	4¾	I. D. Harvey.....	50 00 or com'n.	June 1, 1898.	
	Whitehead Island (¼ do ).	1½				
	Totals.....	27¼		705 00		

CAMPOBELLO SECTION.

	<i>Liberty Cove Cable Hut, to</i>					
1	Welchpool.....	7½	Miss E. G. Vennell....	100 00 and com'n.	Sept. 1, 1895.	
2	Eastport, Maine, U.S.A.....	½	J. Cushing .....	100 00	Dec. 26, 1881.	
	Totals.....	8		200 00		

A cable of 1¼ knots connects Welchpool with the landing ½ mile from Eastport; and a cable of 7¼ knots is laid from Long Eddy, Grand Manan, to Liberty Cove Campobello.

GOVERNMENT TELEGRAPH SERVICE—Continued.

CHICOUTIMI AND NORTH SHORE OF ST. LAWRENCE TELEGRAPH SYSTEM.

CHICOUTIMI SECTION.

No.	Stations.	Inter- mediate Distances.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Bay St. Paul.....	0	F. Boivin.....	180 00 per annum 25 p.c. commission.	Previous to April 1, 1885	*The commission upon business is 25 per cent of the Government tolls of the line; the amount guar- anteed to be not less than \$50 per annum.
2	St. Urbain.....	9	A. Boivin.....	50 00 or commission.	do	
3	La Crûche .....	37	A. Gauthier (repairer).....	50 00 do	do	
4	St. Alexis.....	31½	O. Pelletier .....	210 00 .....	May 15, 1887	Until June 1, 1897, when a second repairer was ap- pointed, the salary paid was \$420 per annum.
5	St. Alphonse de Bagotville.....	3	A. Simard .....	50 00 or commission.	Jan. 1, 1889	
6	Chicoutimi.....	11½	G. N. W. Tel. Co., (J. Fortin (repairer)).....	50 00 do	April 1, 1885	Plus \$12 per annum for care of main battery.
	Branch Line { St. Alexis. 7 L'Anse St. Jean.	0 40	Mrs. R. Martel.....	25 p.c. commission 420 00 per annum.	Nov. 1, 1893 June 1, 1897	
				50 00 or commission.	Aug. 1, 1897	St. Jean. Plus \$12 per annum for care of main battery.
	* Totals .....	132		1,060 00		





Department of Public Works.

NORTH SHORE (East of Bersimis).

1	Pointe aux Outardes (cable)....	12	X. Tremblay* .....	50 00 or comm'n..	Dec.	1, 1896	The repeating office formerly at Manicouagan was removed to Bersimis in September, 1896.
2	Pointe Paradis, Manicouagan...	18	N. A. Comeau .....	50 00 or comm'n..	Oct.	15, 1883	
3	River Godbout (cable).....	26	L. F. Faffard .....	50 00 do ..	Dec.	28, 1883	
4	Pointe des Monts .....	18½	Z. Poulin .....	50 00 do ..	May	16, 1884	
5	Trinity Bay West .....	54½	A. Bilodeau .....	Commission only .....	do	1, 1889	No commission is paid at this office.
6	Trinity Bay East .....	22½	I. Comeau .....	do .....	Sept.	1, 1889	
7	Caribou Islands .....	7	Paul Côté .....	Accommodat'n office.	Jan.	10, 1895	
8	Point aux Anglais. ....	10½	E. H. Têtu, D. Supt .....	1,080 00 per annum.	Nov.	1, 1891	
9	Pentecost River.....	6½	A. Therriault.....	180 00 do ..	July	1, 1888	Plus 50 cents per day when absent on duty.
10	Ste. Marguerite.....	47½	P. E. Vignault, opr. ....	180 00 .....	Jan.	2, 1884	
11	Seven Islands.....	22¾	F. Gallienne, hneuman ..	540 00 .....	April	22, 1890	
12	River Moisie.....	15½	J. Porlier.....	50 00 .....	June	1, 1896	
13	Sheldrake .....	72	A. Le Berge.....	50 00 or comm'n..	Oct.	1, 1897	Long Point is the repeating office for the Anticosti cable in operation since September 1, 1891. The commission at Point aux Esquimaux is 50 per cent, without guarantee as to amount.
14	Thunder River.....	6½	Mrs. H. Cody .....	50 00 do ..	Feb.	1, 1890	
15	Magpie .....	14	Geo. Molloy .....	50 00 do ..	Oct.	1, 1889	
16	St. John's River .....	9	B. Chambers.....	50 00 do ..	do	1, 1889	
17	Long Point.....	10	A. Maloney.....	360 00 .....	Sept	21, 1896	The commission at Point aux Esquimaux is 50 per cent, without guarantee as to amount.
18	Mingan .....	7	M. J. Maloney.....	50 00 or comm'n..	Oct.	1, 1889	
19	Pointe aux Esquimaux.....	24	D. C. Hould .....	Commission only.....	May	21, 1893	
20	Piastre Bay.....	43	S. Tanguay .....	50 00 or comm'n..	Sept.	1, 1897	
21	Aguanus .....	36¾	L. Cummings. ....	100 00 do ..	Oct.	2, 1897	
22	Natashquan .....	16	.....	.....	.....	.....	
23	Kagaska.....	33	.....	.....	.....	.....	
24	+Big Romaine .....	43	.....	.....	.....	.....	
Total .....		506½		2,990 00			

NOTES.—\*The commission, except where otherwise stated, is 25 per cent of the Government line tolls on business handled. †This line is being further extended towards Belle Isle.



GOVERNMENT TELEGRAPH SYSTEM—Continued.

ONTARIO—PELEE ISLAND TELEGRAPH SERVICE.

No.	Stations.	Inter- mediate Distances.	Agents.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Leamington .....	.....	J. McR. Selkirk, D. Supt	50 00 .....	Nov. 1, 1888	The commission is on the tolls for the Government line.
2	Leamington Dock .....	2	F. Deslaurier .....	Accommodat'n office.	do 1, 1895	
3	Club House .....	5	C. Harrison .....	Commission 25 p.c ..	April 1, 1889	
4	Point Pelee .....	5	W. A. Grubb .....	do ..	Nov. 1, 1888	
5	Dummy Light (Cable) .....	2	W. Grubb .....	do ..	July 1, 1898	
6	Lizard Point Landing (Cable) ..	7½	.....	.....	.....	North Point Lighthouse is the repeating office for the system, when occasion requires.
7	North Point Light Island .....	1	J. E. Quick .....	50 00 and comm'n Dec.	1, 1890	
8	North Dock .....	2	C. B. Quick .....	Commission 25 p.c ..	1, 1888	
9	McIntyre's Corners .....	2½	Mrs. A. McIntyre .....	do ..	do 1, 1896	
10	West Dock. ....	2½	A. M. McCormick .....	do ..	do 9, 1888	
11	South Dock. ....	4½	F. B. McCormick .....	do ..	do 1, 1888	
	Total .....	34		100 00		

NOTE. — This line is operated with telephones.

Stations.	Inter- mediate Distances.	Agents.	Salaries per Annum.	Date of Appointment.	Memo.
<i>Qu'Appelle-Edmonton Section.</i>					
1 Qu'Appelle.....	0	J. S. Macdonald, Dist. Supt.	1,200 00	Jan. 1, 1898.	The Agt.-Opr. at Qu'Appelle is joint with the C.P.R.
2 Fort Qu'Appelle.....	17	C.P.R. Tel. Co.'s	420 00	Dec. 1, 1896.	
3 Touchwood.....	46	Miss E. Johnston	600 00	Mar. 1, 1885.	
4 Humboldt.....	78	A. Von Lindeburgh	600 00	Nov. 1, 1883.	
5 Saskatoon (14 miles loop).....	69	C.P.R. Tel. Co.'s	300 00	Jan. 1, 1892.	Humboldt office was closed 20th August, 1893. The Agt.-Opr. at Saskatoon is joint with the C.P.R.
6 Henrietta.....	52	J. Harrington, repairer.	600 00	do 1, 1888.	
7 Battleford.....	47	W. Salsbury.....	720 00	Oct. 1, 1886.	The repairer, formerly stationed at Battleford, was transferred to Humboldt, in November, 1892, and thence to Moosejaw, May, 1893.
8 Bresaylor.....	27	L. P. O. Noel.....	720 00	April 15, 1890.	
9 Fort Pitt.....	62	H. McLennaghan.....	480 00	Sept. 19, 1895.	
10 Onion Lake.....	13	D. Noel.....	600 00	Mar. 1, 1897.	
11 Moose.....	32½	G. G. Mann, operator & agent	240 00	Jan. 1, 1892.	Special connection for Mounted Police. The office at Edmonton has been operated jointly with the C.P.R. Tel. Co. since 1st January, 1892.
12 Saddle Lake.....	45	A. W. Campbell.....	600 00	June 26, 1896.	
13 Victoria.....	37	L. Picard.....	600 00	July 1, 1891.	
14 Fort Saskatchewan.....	49	W. C. Gillis.....	720 00	Jan. —, 1887.	
15 Edmonton.....	24	W. G. Ross.....	Com. 25 p. c.	Dec. —, 1886.	The St. Albert branch line is operated with telephones. It was leased to the Edmonton District Telephone Co., from 24th October, 1895.
Branch Line— Edmonton.....	0	G. M. Graham.....	120 00	Jan. —, 1896.	
St. Albert.....	9	G. Voyer.....	300 00	Mar. 1, 1893.	
<i>Wood Mountain Section.</i>					
1 Moosejaw.....	0	W. McKay, repairer.....	720 00	May 1, 1886.	Moosejaw office is operated jointly with the Canadian Pacific Telegraph Co.
2 Wood Mountain.....	90½	A. Wilcox, agent.....	240 00	Dec. 1, 1891.	
		H. Sikes, repairer.....	600 00	do 1, 1893.	
Total.....	698	J. H. Thompson, agent.....	180 00	do 1, 1890.	



GOVERNMENT TELEGRAPH SERVICE—Continued.

GOVERNMENT TELEGRAPH SERVICE IN BRITISH COLUMBIA.

No.	Stations	Inter- mediate Distances.	Agents.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Ashcroft—Barkerville.†</i>	Miles.		\$ cts.		
1	Ashcroft Station.....	0	Jas. Wilson (Kamloops), joint dist. supt. Govt. & C.P. lines	180 00	.....	Proportion of salary pertaining to this line. do
2	Clinton.....	30	Can. Pac. Ry. Co., joint agent	240 00	Jan. 1, 1896.	
3	Bridge Creek (108-Mile House).	53	A. LeBourdais, agt. & rep...	600 00	Feb. 16, 1883.	
4	150-Mile House*.....	40	C. H. Tingley do .....	720 00	Prior to 1891.	
5	Soda Creek.....	38	S. T. Hall, agt. & operator...	456 00	Nov. 1, 1896.	*There is a testing office at 134-Mile House The business done there is accounted at 150-Mile House office.
6	Quesnelle.....	54½	G. H. Smith, agt. & repairer.	900 00	Mar. 1, 1896.	
7	Stanley.....	48	J. E. Bowron do .....	564 00	Prior to 1891.	
8	Barkerville.....	13	Accommodation com. office...	1,000 00	Feb. 17, 1873.	
	Total.....	276½	J. Stone, agent and repairer.	4,666 00		
	<i>Ashcroft—Lillooet.†</i>					
1	Ashcroft Station.....	0	Jas. Wilson (Kamloops), joint dist. supt. Govt. & C.P. lines	120 00	.....	Proportion of salary pertaining to this line. do
2	Pavillion.....	40	Can. Pac. Ry. Co., joint agt.	240 00	Jan. 1, 1896.	
	Lillooet.....	22	Accommodation office, com...	720 00	Dec. 1, 1896.	
	Total.....	62	S. A. Macfarlane, agt. & ope.	1,080 00	Jan. 3, 1896.	
	<i>Victoria—Cape Beale.†</i>					
1	Victoria.....	0	Jas. Wilson (Kamloops), joint dist. supt. Govt. & C.P. lines	120 00	.....	Proportion of salary pertaining to this line. Proportion of salary.
2	Sooke.....	18	Can. Pac. Ry. Co., joint agent	240 00	Nov. 1, 1891.	
3	Otter Point.....	8	M. Milne, commission office.	720 00	April 21, 1896.	
4	Jordan River.....	10	E. Gordon, agt. & operator...	540 00	Dec. 1, 1891.	
5	Port San Juan.....	30	J. Goudie do .....	720 00	May 1, 1897.	A. H. Floyer in charge April-Nov., 1897.
			J. W. Williams do .....	240 00	Oct. 25, 1892.	
6	Carmanah Lighthouse.....	24	W. P. Daykin, agt. & operator	540 00	Nov. 1, 1891.	
7	Cape Beale.....	28	D. Logan, repairer.....	540 00	April 1, 1898.	
			J. W. Irwin do .....	120 00	Dec. 1, 1897.	†These three lines are operated by the Canadian Pacific Railway Co. for the Government, the arrange- ment being terminable at any time.
	Total.....	118	M. Patterson, agt. & operator	3,780 00	Sept. 1, 1895.	

GOVERNMENT TELEGRAPH SERVICE IN BRITISH COLUMBIA.

NANAIMO, COMOX AND ALBERNI.

Department of Public Works.

No.	Office.	Inter- mediate Distances.	Agents, etc.	Positions.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.			\$ cts.		
1	Nanaimo.....	0	Joint with C.P.R. .	Agent and operator..	186 00	March 1, 1896..	This payment—\$15.50 per month—comprises \$10 for agency, \$3 for messenger service, and \$2.50 for care of main battery.
2	Wellington.....	5	E. & N. Ry. Co....	do ..	Commission.	April 1, 1893 ..	
3	Parksville.....	23	Mrs. R. Williams...	do ..	240 00	Dec. 1, 1897..	
4	Fanny Bay.....	23	Geo. Williams.....	Repairer..	570 00	do 1, 1897..	See mention of this in body of report (1897-98).
5	Union Bay.....	9½	D. R. O'Hanley.....	do ..	780 00	May 22, 1896..	
6	Union Mines.....	.....	E. McDonald.....	Agent and operator..	300 00	June 3, 1898..	
7	Cumberland.....	10	J. Dunsmuir .....	Accommodat'n office.	.....	.....	Courtney and Fanny Bay are communicated with by telephone at pre-arranged intervals. At Comox the salary was \$120 per year without commission, until 1st July, 1897.
			Albert Peacy .....	Agent and operator..	120 00	.....	
			.....	.....	& com. 25 p.c.	April 28, 1898..	
8	Courtney.....	7	.....	.....	180 00	.....	NOTE.—These two lines are operated by the Government through the office of the resident engineer at Victoria.
9	Comox .....	3¾	M. McDonald .....	Agent and operator..	.....	.....	
		81	.....	.....	& c m. 25 p.c.	Nov. 1, 1895..	
10	{ Parksville .....		C T. Haslam .....	Agent and operator..	600 00	June 27, 1895..	
		29½			.....	.....	
		110½			2,976 00	.....	
	Total ...						

Branch.



GOVERNMENT TELEGRAPH LINES.  
SPECIAL TARIFF.

*Cable messages.*—The rate for transatlantic messages passing over the Government lines is the same as for ordinary through messages, excepting where the ordinary tariff is more than 25 cts.; in such cases the Government line rate is 4 cts. per word, with a minimum charge of 25 cts. For example:—  
For a message of 6 words or less the charge is 25 cts. for Government line.  
For a message of 7 words the charge is (7 x 4 c.) 28c. for Government line.  
For a message of 12 words the charge is (12 x 4 c.) 48c. for Government line.  
In every case the counting of words includes the address and signature in the same way as for transatlantic cable tolls.  
*Press despatches.*—The rate for press despatches on the Government lines, formerly a quarter cent per word, has been changed to 20 cents per 100 words; no single message less than 20 cents.

REGULAR TARIFF.

NOVA SCOTIA.

*Line from North Sydney to Meat Cove—Local rate 25-1 (13 offices).*

Big Bras d'Or .....	Through rate 25-1 from North Sydney, W. U. Office.	
New Campbellton (Kelly's Cove) .....	do	do
Port Bevis .....	do	do
Englishtown .....	do	do
Baddeck .....	do	do
St. Anne, South Gut.. ..	do	do
French River .....	do	do
South Ingonish .....	do	do
Ingonish .....	do	do
Neil's Harbour .....	do	do
White Point .....	do	do
Aspy Bay .....	do	do
Meat Cove .....	do	do

*Line from Mabou to Cheticamp—Local rate 25-2 (6 offices).*

Broad Cove .....	Through rate 15-1 from Mabou, W. U. Office.	
S. W. Margaree .....	do	do
Margaree Harbour .....	do	do
North East Margaree. ....	do	do
Grand Etang .....	do	do
Cheticamp .....	do	do

*Line from Barrington to Cape Sable—Local rate 12-1 (2 offices).*

Newellton .....	Through rate 12-1 from Barrington, W. U. Office.	
Cape Sable Lt. House.....	do	do

# Department of Public Works.

## NEW BRUNSWICK.

*Line from Chatham to Point Escuminac—Local rate 25-1 (4 offices).*

Bay du Vin. ....	Through rate 15-1 from Chatham, G. N. W. Office.
Lower Hardwicke ...	do do
Escuminac. ....	do do
Pt. Escuminac Lt. House..	do do

*Line from Eastport, Me., to Campobello, Grand Manan, and Whitehead Islands (9 offices).—Local rates between offices on Grand Manan, and Whitehead Islands 15-1 ; Grand Manan and Campobello Island 25-2 ; The Islands and Eastport, Me. 25-2. W.U.O.*

Welchpool, Campobello ....	Through rate 25-2 from Eastport, Me., W. U. Office.
Flagg's Cove, Grand Manan	do do
Castalia ....	do do
Woodward's Cove .....	do do
Grand Harbour. ....	do do
Seal Cove. ....	do do
Southern Head ....	do do
Cheney's Island .....	do do
Whitehead Island ....	do do

## QUEBEC.

*Line from Gaspé to Anticosti Island, Q. (9 offices)—Local rates between offices on the Island 25-1 ; Gaspé and the Island offices 50-2.*

South-west Point .....	Through rate 50-2 from Gaspé, G. N. W. Office.
Salt Lake ....	do do
Shallop Creek .....	do do
South Point. ....	do do
Heath Point .....	do do
Fox Bay... ..	do do
Becscie River. ....	do do
West Point. ....	do do
English Bay .....	do do

*Line from Meat Cove, C.B., N.S., to Magdalen Islands, Q. (8 offices)—Local rates between offices on the Islands 25-1 ; Meat Cove and the Islands 50-2 ; Offices on the Meat Cove Line and the Islands 50-2.*

Amherst Island ....	Through rate 50-2 from N. Sydney, N.S., W.U. Office.
Amherst Lt. House. ....	do do
Etang du Nord Village ...	do do
Etang du Nord Lt. House.	do do
Cap aux Meules (Grindstone)	do do
House Harbour. ....	do do
Grosse Isle. ....	do do
Grand Entry.. ....	do do



*Line from Meat Cove, C.B., N.S., to St. Paul's Island.—Local rate between offices on Meat Cove Line and St. Paul's 50-2 (1 office).*

St. Paul's Island Lt. House from North Sydney, N.S., W. U. Office.

*Line from Quebec to Grosse Isle Quarantine Station (7 offices)—Local rates between offices on Orleans Island and Isle Réaux 15-1 ; on Orleans Island, Isle Réaux and Quebec 15-1 ; on Orleans Island and Grosse Isle 25-1 ; on Isle Réaux and Grosse Isle 15-1.*

St. Pierre, Orleans Island...Through rate 15-1 from Quebec, G. N. W. Office.

Ste. Pétronille . . . . .	do	do
St. Laurent. . . . .	do	do
St. Jean . . . . .	do	do
St. François . . . . .	do	do
Isle Réaux . . . . .	do	do
Grosse Isle . . . . .	do	25-1 do

*Line from Baie St. Paul to Chicoutimi (6 offices).*

For business with offices west of Baie St. Paul, and terminating at Quebec, add 15c. and 1c. to the Government line tariff.

For business with offices west of Baie St. Paul, beyond Quebec, add the full rate of the Great North-Western Telegraph Company to the Government line tariff.

*Line from Murray Bay to Point Esquimaux (38 offices), with branch to Anticosti.*

For business with offices west of Murray Bay and terminating at Quebec, add 15c. and 1c. to the Government line tariff.

For business with offices west of Murray Bay beyond Quebec, add the full rate of the Great North-Western Telegraph Company to the Government line tariff.

*Local rates between offices not more than 100 miles apart 15-1 ; more than 100 miles apart 25-1 ; on Mainland and Anticosti 50-2.*

St. Urbain . . . . .15-1 from Baie St. Paul (Ck. Que.) G. N. W. Office.

Lacruche . . . . .	do	do
St. Alexis . . . . .	do	do
L'Anse St. Jean . . . . .	do	do
St. Alphonse de Bagotville.	do	do
Chicoutimi . . . . .	do	do

Cap à l'Aigle . . . . .15-1 from Murray Bay (Ck. Que.) G. N. W. Office.

Ste. Fidèle . . . . .	do	do
Port au Persil . . . . .	do	do
St. Siméon. . . . .	do	do
Baie des Rochers . . . . .	do	do
Rivière au Canards . . . . .	do	do
St. Etienne . . . . .	do	do
Tadousac . . . . .	do	do
Bergeronnes . . . . .	do	do
Escoumains . . . . .	do	do

## Department of Public Works

*Local rates between offices on Mainland and Anticosti—Continued.*

Baie des Bacons .....	15-1	from Murray Bay (Ck. Que.)	G. N. W. Office.
Mille Vaches .....	25-1	do	do
Portneuf Mills .....	do	do	do
Portneuf Light .....	do	do	do
Sault au Cochon .....	do	do	do
Betsiamits (Bersimis) ..	do	do	do
Manicouagan (Pt. Outardes)	do	do	do
River Godbout .....	do	do	do
Pointe des Monts .....	do	do	do
Trinity Bay, West .....	do	do	do
Trinity Bay, East .....	do	do	do
Caribou Islands .....	do	do	do
English Point. ....	do	do	do
Pentecost .....	do	do	do
Ste. Marguerite .....	do	do	do
Seven Islands. ....	do	do	do
River Moisie .....	do	do	do
Sheldrake .....	do	do	do
Thunder River .....	do	do	do
Magpie .....	do	do	do
St. John's River. ....	do	do	do
Long Point. ....	do	do	do
Mingan .....	do	do	do
Point Esquimaux .....	do	do	do
Piastre Bay .....	do	do	do
Aguanus .....	do	do	do
Natashquan .....	do	do	do
Big Romaine .....	do	do	do
Anticosti Id., via Long Point	50-2	do	do

### ONTARIO.

*Line from Leamington to Pelee Island (Telephone Circuit)—Local rates between Leamington and Point Pelee 15-1 ; Mainland and Island Offices 25-1 ; Offices on the Island 15-1. (8 offices.)*

Gun Club House, Mainland.	15-1	(thro' business) from Leamington,	G. N. W.
Point Pelee .....	do	do	do
Dummy Light .....	do	do	do
North Point Lt. House, Pelee			
Island .....	do	do	do
North Dock, Pelee Island..	do	do	do
McIntyre's Corners .....	do	do	do
West Dock, Pelee Island..	do	do	do
South Dock .....	do	do	do



## NORTH-WEST TERRITORY.

*Line from Qu'Appelle (C.P.R. Stn.) to Edmonton, Alberta—Local rates 15-1, 25-2 and 50-3 for distances 10 to 600 miles. (13 offices.)*

Fort Qu'Appelle . . . . .	25-2	Qu'Appelle or Saskatoon.
Touchwood . . . . .	do	do
Saskatoon (Trans. Office C. P. R. Tel.) . . . . .	do	
Henrietta . . . . .	do	do
Battleford . . . . .	do	do
Bresaylor . . . . .	25-2	Saskatoon; 50-3 Qu'Appelle or Edmonton.
Pitt . . . . .	do	do
Onion Lake . . . . .	do	do
Moose . . . . .	50-3	Saskatoon, Qu'Appelle or Edmonton.
Saddle Lake . . . . .	do	do
Victoria . . . . .	25-2	Edmonton; 50-3 Qu'Appelle or Saskatoon.
Fort Saskatchewan . . . . .	do	do
Edmonton (Trans. office C. P. R. Tel.) . . . . .	do	do

*Line from Moosejaw (C.P.R. Stn.) to Wood Mountain—Local rates 25-2 (1 office).*

Wood Mountain . . . . .	25-2 from Moosejaw.
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## BRITISH COLUMBIA.

*Line from Ashcroft (C.P.R. Stn.) to Barkerville—Local rates 25, 50, 75 (9 offices).*

Clinton . . . . .	25-2 from Ashcroft C.P.R. Tel. Office.
Bridge Creek . . . . .	do do
150-Mile House . . . . .	50-3 do do
Soda Creek . . . . .	do do
Quesnelle . . . . .	do do
Stanley . . . . .	75-5 do do
Barkerville . . . . .	75-5 do do
Lillooet (branch) . . . . .	50-3 do do
Pavillion (on Lillooet branch) . . . . .	do do

*Line from Victoria to Cape Beale—Local rate 50-3 (6 offices).*

Sooke . . . . .	50-3 from Victoria, C.P.R. Tel. Office.
Otter Point . . . . .	do do
Jordan River . . . . .	do do
Port San Juan . . . . .	do do
Carmanah Lt. House . . . . .	do do
Cape Beale . . . . .	do do

*Line from Nanaimo to Comox—Local rate 25-2 (9 offices).*

Wellington (C.P.R. & E. & N. Ry.) . . . . .	25-2 from Nanaimo.
Parksville . . . . .	do or Wellington.
Fanny Bay . . . . .	do do

Department of Public Works.

Line from Nanaimo to Comox—Continued.

Cumberland . . . . .	25-2 from Nanaimo or Wellington.	
Union Bay . . . . .	do	do
Union Mines . . . . .	do	do
Courtney . . . . .	do	do
Comox . . . . .	do	do
Alberni (branch) . . . . .	do	do
Offices on Government lines as listed . . . . .		149
Offices at transfer points with connecting lines . . . . .		15
Total number embraced by the Service . . . . .		164

N.B.— When the tariff rate is entered as 25 1 or 50-2, etc., the meaning is that the rate is 25 cents or 50 cents for ten words and 1 cent or 2 cents for each additional word.





Department of Public Works.

PART VI.

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REPORT OF THE COLLECTOR OF REVENUE

DEPARTMENT OF PUBLIC WORKS, 1897-98





# Department of Public Works.

## REPORT OF THE COLLECTOR OF REVENUE.

DEPARTMENT OF PUBLIC WORKS,  
COLLECTION OF REVENUE,  
OTTAWA, 23rd January, 1899.

E. F. E. Roy, Esq.,  
Secretary, Department of Public Works,  
Ottawa.

SIR,—I have the honour of submitting my report for the year ended 30th June, 1898.

The books and accounts of all the officials under my control, except the dock master at Esquimalt, have been examined and it is my pleasing duty to state that all these officials have complied with the rules laid down for their guidance by the department, and have faithfully accounted for all the revenues collected by them, and it affords me still greater pleasure to state that the gross collections exceeded those of 1896-97 by \$24,183.72.

With your permission I will refer to the different sources of revenue, seriatim, commencing with that from

### SLIDES AND BOOMS.

#### OTTAWA DISTRICT.

The revenue accrued, all told, amounted to \$60,765.90, or \$9,185.23 more than the preceding year.

The number of saw-logs which passed through the works was 4,066,001 pieces, or 263,352 less than the preceding year, and the number of pieces of square timber was 25,851, or 11,779 more than in 1896-97. The difference in revenue is accounted for by the unusually large number of logs that came from the Petewawe, where the tolls are the highest in the tariff and the increase in square timber.

All the revenue from the Ottawa district for the year 1897-98, was collected.

Of the dues accrued since 1st July, 1889, there remains still uncollected \$7,507.98 full particulars of which are to be found in Statement No. 2 herewith.

Of the dues accrued prior to 1st July, 1889, there remains uncollected \$56,805.65 all of which should be written off, see Statements Nos. 1 and 3 for details.

The accounts for the Ottawa district stand thus :—

Dues accrued during the year 1897-98..... \$60,765 90  
All of which was collected within the year.



The amount outstanding on 30th June last remains the same as on 30th June, 1897, thus :—

Dues accrued prior to the collection being transferred to this department, 1st July, 1889....\$ 56,805 65

Dues of 1889-90 .....	\$6,903 05	
do 1890-91.....	28 42	
do 1892-93.....	379 80	
do 1896-97 .....	196 71	
	<hr/>	7,507 98
		<hr/>
		\$64,313 63

It may be worthy of notice that since this department assumed control of the collection 1st July, 1889; of the revenue accrued, say \$546,998.62 not including \$6,903.05 which should not have been charged, only \$28.42 of absolutely established revenue is uncollected—all the remainder should be written off but the last item of 1896-97 which possibly ought to meet with the same treatment.

Herewith are statements in detail :—

No. 1 Statement of amounts outstanding prior to 1st July, 1889, uncollected 30th September, 1898.

No. 2. Statement of amounts accrued at Ottawa since 1st July, 1889, uncollected 30th September, 1898.

No. 3. Statement of amounts accrued at Quebec prior to 1st July, 1889, uncollected 30th September, 1898.

No. 4. Statement of number of pieces of square timber, saw-logs, &c., which passed through the Ottawa district works during the year ended 30th June, 1898.

No. 5. Statement of dues accrued from each of the slides and works in the Ottawa district during the year ended 30th June, 1898.

#### ST. MAURICE DISTRICT.

The revenue for 1897-98 was \$29,893.41, or \$7,802.91 more than the preceding year, and is the largest on record from these works.

All the dues of 1897-98 were collected within the financial year.

Of the amount outstanding when I took charge of the district in 1892, namely \$14,481.49 nothing has been collected for, as I have frequently reported, it should all be written off.

I can with pleasure again call attention to the fact that there is not a cent of the revenue accrued, since I took charge, that has not been collected.

Full details of the arrears will be found in statement No. 6.

#### NEWCASTLE DISTRICT.

The accompanying statement No. 7 shows details of \$6,058.34 uncollected, of which \$3,521.19 should be written off in accordance with a judgment of the Exchequer Court.

With regard to the remainder \$2,537.15, the Deputy Minister and I have made strenuous efforts to bring about a settlement, but through the vacillating actions of one of the parties concerned have not as yet succeeded, but at this writing I understand that the matter is being closed by the department and I hope this is the last time I shall have to refer to this matter.

## Department of Public Works.

As stated in my last report there has been for the past five years a possible remodelling of the tariff in view, in consequence of our right in equity to impose and collect tolls on certain works being challenged; it was deemed best not to enforce the existing tariff pending settlement of the case now before the department, as the opposite course might expose the department to legal proceedings involving considerable expense and possible loss, and moreover had the dues been charged up under the present tariff and the latter declared *ultra vires*, then there would appear a large amount of apparently outstanding revenue, which, while it could not be collected, could only be written off by authority of Parliament—something not readily obtained.

To conclude, therefore, the total collections from slides and booms during the year were as follows:—

From the Ottawa district.....	\$60,765 90
do St. Maurice district.....	29,893 41
Total.....	<hr/> \$90,659 31 <hr/>

### GENERAL REMARKS.

The outlook in the Ottawa district for the coming year is not too promising, as the United States duty on lumber has had the effect of causing large stocks of the coarser grades of lumber to be piled up all over the country, representing immense sums of capital absolutely locked up and involving heavy losses in insurance and by deterioration.

The diminution in the cut of 1897-98 was much larger than I anticipated, the revenue for 1898-99 being fully one-third less than last year.

The cut of square timber will be the smallest ever known this winter, owing I am credibly informed to the fact that none of the timber made last year, except what was sold in the woods, was disposed of since it reached Quebec last summer.

The same causes will affect the St. Maurice district to a considerable extent, the cut this winter being in all probability over 33 per cent less than in 1897-98, and it would have been even smaller but for the extensive paper mills at the Grande Mère which consume at least 500,000 spruce logs annually.

The revenue for 1898-99 will probably be nearly 40 per cent less than for 1897-98.

### GRAVING DOCKS.

#### ESQUIMALT, B.C.

The revenue was \$6,227.92, being \$1,286.97 less than the previous year. The tonnage of vessels docked was 28,453 against 27,914 or 539 tons more than in 1896-97, but the dock was only occupied for 91 days or 12 days less than last year. See Statement No. 8.

Our anticipations as to a largely increased business arising from the Yukon shipping trade were not realized, nevertheless the revenue since 1st July last has increased in a very marked degree, being \$7,103.80 for the six months ended 31st December, 1898.

#### LEVIS GRAVING DOCK.

For the year ended 30th June last, the revenue amounted to \$19,839.97, being \$7,493.40 more than for 1896-97.



The dock was occupied for 156 days, as against 77 days in the year before. The tonnage of vessels docked was 18,913, or 2,059 tons more than in the previous year. See statement No. 9.

The dock was occupied all winter by the Str. "Turret Cape," and the sum of \$292.45 a disputed account collected.

#### KINGSTON GRAVING DOCK.

The revenue from this source was \$7,448.31, being \$1,087.71 more than in the previous year.

The dock was occupied during 136 days of the navigation year, and the Str. "Rosedale" wintered in it.

The tonnage of vessels docked was 17,623 or 8,382.76 less than the previous year. The number of vessels docked being 136 or 84 more. See Statement No. 10.

#### LOCKS.

##### RIVIERE DU LIEVRE.

The revenue from this work was \$246.84, or \$48.39 more than in 1896-97.

##### RIVER YAMASKA.

The tolls collected at this lock amounted to \$355.46, or \$90.55 more than in the preceding year.

The total collections that passed through my hands during the year, may be summarized as follows :—

From Slides and booms.....	\$ 90,659 31
do Graving docks.....	33,516 20
do Lévis docks. ....	602 30
	<hr/>
	\$124,777 81

In conclusion I have to acknowledge the uniform courtesy and cheerful assistance accorded me at all times by the officers with whom I have been brought in contact during the year.

I have the honour to be, sir,

Your obedient servant,

EDWARD T. SMITH,

*Collector of Public Works Revenue.*

Department of Public Works.

No. 1.—STATEMENT of Slidage and Boomage from the Ottawa Slides and Works, accrued prior to 1st July, 1889, outstanding 30th June, 1898, and remaining uncollected on 30th September, 1898.

By Whom Due.	Bad and Doubtful Debts.	Chaudière Boomage in Suspense.	Other Slide and Boom dues dis- puted.	Total Outstanding on 30th Sept. 1898.	Year to which Dues belong.	Remarks.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.		
John & Wm. McLean	53 14	*	..	53 14	1873.....	Insolvent.
John Rowan	342 50	..	..	342 50	1872-1873.....	do
Lemieux & Charette.	21 30	..	..	21 30	1873.....	do
Taillon & Lapierre.	148 10	..	..	148 10	1873-1874.....	do
Mosgrove & McHarry	261 42	..	..	261 42	1873-1874.....	do
W. C. Wells	600 90	..	..	600 90	1873 1874.....	do
Dufresne & McGarity.	528 80	..	..	528 80	1874-1875.....	do
Walton Smith	171 46	..	..	171 46	1874-1875.....	do
A. H. Baldwin	3,507 92	..	..	3,507 92	1871 to 1874.....	do
Hon. James Skead	9,807 65	..	..	9,807 65	1861, 1862, 1864, 1869, 1875 to 1878.....	do
Batson & Currier	5,558 70	..	..	5,558 70	1875 to 1877.....	do
A. F. A. Knight.	546 30	..	..	546 30	1878.....	do
James Walker	11 25	..	..	11 25	1877.....	do
R. Campbell & Son.	1,558 50	..	..	1,558 50	1879 to 1881.....	do
James G. Bryson	73 50	..	..	73 50	1886.....	do
Costello Bros	90 62	..	..	90 62	1882.....	do
N. E. Cormier.	428 34	..	..	428 34	1888.....	do
James Yuill	9 29	..	..	9 29	1876.....	Overcharge.
J. & B. Grier.	76 84	..	..	76 84	1883.....	do
R. & W. Conroy.	95 42	..	..	95 42	1882-1883.....	do
A. & P. White.	101 00	..	..	101 00	1881.....	do
B. Caldwell & Son.	4 33	..	..	4 33	1887.....	do
J. R. Booth	..	9,871 93	398 88	10,270 81	1881 to 1888.....	do
Perley & Pettee.	..	8,889 85	..	8,889 85	1881 to 1888.....	\$398.88 counter claim for damages by the breaking of Coulonge Boom.
The Bronsons and Weston Lumber Co	..	8,180 79	..	8,180 79	1881 to 1888.....	
Pierce & Co.	..	462 18	..	462 18	1888.....	
G. A. Grier & Co.	..	1,060 59	..	1,060 59	1886 1887.....	*Chaudière Boomage—These parties claim that they have maintain-
Estate late Levi Young.	..	1,461 20	..	1,461 20	1881 to 1885.....	ed these works wholly at their own expense since 1881.
Wm. Mason	..	413 85	..	413 85	1881 to 1888.....	



NO. I.—STATEMENT of Slidage and Boomage from the Ottawa Slides and Works, accrued prior to 1st July, 1889, outstanding 30th June, 1898, and remaining uncollected on 30th September, 1898—*Concluded.*

By Whom Due.	Bad and Doubtful Debts.		Chaudière Boomage in Suspense.		Other Slide and Boom Dues disputed.		Total Outstanding on 30th Sept., 1898.		Year to which Dues belong.	Remarks.
	\$	cts.	\$	cts.	\$	cts.	\$	cts.		
Gilmour & Co. ....			406	27			406	27	1884.....	} Counter claim for damages by breaking of Coulouge works.
John Rochester. ....			258	88			258	88	1881-1883.....	
J. & G. Bryson. ....					252	20	252	20	1886.....	
	23,997	28	31,005	54	651	08	55,653	90		

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DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.

EDWARD T. SMITH,  
*Collector of Slide and Boom Dues.*

No. 2.—STATEMENT of Slide and Boom Dues accrued from the Ottawa River Works since 1st July, 1889. Outstanding on 30th September, 1898.

Name.	Year to which Dues belong.	Chaudière Boomage in suspense.	Ordinary Dues.	Total Outstanding.	Remarks.
		\$ cts.	\$ cts.	\$ cts.	
J. R. Booth	1889-90	2,561 69		2,561 69	Chaudière Boomage reported to Council and referred to the Treasury Board ; should be written off.
The Bronsons and Weston Lumber Co.	do	2,056 96		2,056 96	
Perley and Patten.	do	1,203 26		1,203 26	
Wm. Mason & Sons	do	167 66		167 66	
Pierce & Co.	do	913 48		913 48	Legal action taken to recover this. Retained by Mr. Booth in settlement of an account due him, which the Auditor General refuses to pay, as Mr. Booth appeared to be in arrears in this and statement No. 1.
Alex. Fraser acct. Thos. Stephens	1890-91		28 42	28 42	
J. R. Booth	1892-93		379 80	379 80	
			196 71	196 71	Have counter claim for works done on slide to this amount.
Bryson and Fraser	1896				
		6,903 05	604 93	7,507 98	

EDWARD T. SMITH,  
*Collector of Slide and Boom Dues.*



No. 3.—STATEMENT of Outstanding Slide dues, Ottawa District, bonds for which were sent to Quebec for collection.

Name.	From 1860.	From 1861.	Total.
	\$ cts.	\$ cts.	\$ cts.
Hon. James Skead .....	245 00	210 00	455 00
James Mair .....	.....	696 75	696 75
	245 00	906 75	1,151 75

These amounts were uncollected, as the parties claimed damages for loss caused by the Madawaska boom breaking away in 1860.  
A decision on their claim was not arrived at till 2nd August, 1869 ; on the 5th *idem*, Messrs. Skead and Mair were notified that the department could not recognize their claim.  
To the best of my knowledge this decision was never communicated to the collector of slide dues, consequently their accounts remained in abeyance.  
Since then, both parties have died, and I believe both were insolvent at the time of their death.

EDWARD T. SMITH,  
*Collector of Slide and Boom Dues.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.

No. 4.—STATEMENT of number of pieces of square timber, saw-logs, &c.. that passed through the Government slides and works, on the River Ottawa and its tributaries, during the fiscal year ended 30th June, 1898.

	Pieces.
Square timber .....	25,851
Saw logs .....	4,066,001
Boom and dimension timber .....	103,640
Flat and round timber .....	6,947
Cedars .....	25,977
Railroad ties .....	231,044
Fence posts .....	69,399
Telephone poles .....	400
Total .....	4,529,259

Also 8,207<sup>47</sup>/<sub>100</sub> cords pulp wood and 93½ cords shingle wood. The revenue accrued on the above was \$60,765.90.

EDWARD T. SMITH,  
*Collector of Slide and Boom Dues.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.

# Department of Public Works.

No. 5.—STATEMENT showing the dues accrued on the undermentioned works on the River Ottawa and its tributaries during the fiscal year ended 30th June, 1898.

River or other Improvement.	Amount.	
	\$	cts.
Main Ottawa .....	5,758	48
Cheneaux boom .....	9,209	21
River Petewawa .....	20,280	04
do Madawaska .....	10,025	57
do Coulonge .....	4,071	63
do Dumoine .....	612	39
Black River .....	2,566	02
Gatineau boom .....	8,242	41
Overpayment. . . . .	60,765	75
		0 15
Total.....	60,765	90

EDWARD T. SMITH,  
*Collector of Slide and Boom Dues.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.



No. 6.—STATEMENT of Slide and Boom Dues from the St. Maurice Slides and Works outstanding on 30th June, 1898, and remaining uncollected on the 30th September, 1898.

Name.	Year to which Dues belong.	Amount.	Total.	Remarks.
		\$ cts.	\$ cts.	
George Baptist, Son & Co.	1878	469 95		Have counter claims for damages to logs caused by the booms not being stretched early enough in the spring of 1878 to prevent the logs going over the Chutes.
do do	1879	2,110 62		
do do	1880	1,696 18		
do do	1881	293 69		
do do	1882	165 80		
do do	1884	118 50		
do do	1888	4 28	4,859 02	These claims were submitted to special commissioner, Mr. McDougall, afterwards judge, who, after hearing the evidence on both sides, recommended that the claims of the parties should be allowed.
Ross, Ritchie & Co.	1878	3,072 84		
do	1883	2,173 68		
do	1884	28 96		
do	1886	1 62		
do	1887	4 38	5,281 48	
Alex. Baptist	1879		2,116 96	
William Ritchie & Co.	1888	779 24		
do do	1889	332 11	1,111 35	Of this amount \$754.20 is claimed to be an overcharge.
Ritchie Bros.	1886	413 43		
do	1887	634 71	1,048 14	This amount is composed of overcharges in 1886 and 1887 of \$842.76 and overpayment in 1884 of \$205.38.
G. B. Hall	1890		49 34	Insolvent.
T. E. Normand	1890		14 28	Claims that this balance is an overcharge.
Trefflé Biron	1891		0 92	Would cost more to collect than it is worth.
Total			14,481 49	

To make this balance agree with the Public Accounts, there should be deducted \$7.93 overcredited Alex. Baptist, and \$217.17 added thereto, being \$190.40 paid 23rd July, 1884, and \$26.77 overcharged in error to Wm. Little, not in any of the collector's returns, which will give balance due 30th September, 1894, of \$14,690.73.

EDWARD T. SMITH,  
*Collector of Slide and Boom Dues.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.

## Department of Public Works.

No. 7.—STATEMENT of Slide and Boom Dues accrued from the Newcastle and Trent River Works outstanding on the 30th June, 1898, and remaining uncollected on the 30th September, 1898.

Name.	Year to which Dues belong.	Amount.	Total.	Remarks.
		\$ cts.	\$ cts.	
Irwin & Boyd..	1881.....	59 79	.....	Insolvent.
Thomson & McArthur....	1880.....	52 78	.....	do
Jabez Thurston.....	1882.....	12 50	.....	do
McDougall & Ludgate ....	1879.....	65 07	.....	do
Bigelow & Trounce.....	1882 to 1885.....	216 21	.....	do
R. & G. Strickland.....	1882, 1883, 1885, 1886 and 1887.	215 08	.....	do
Estate late Geo. Hilliard ..	1877 to 1883 and 1886.....	354 15	.....	Dead and estate distributed.
T. G. Hazlett.....	1881, 1882, 1884 to 1889.....	885 25	.....	According to judgment in Exchequer Court <i>re</i> Boyd <i>vs.</i> Smith these cannot be collected.
J. M. Irwin.....	1882, 1883, 1885 to 1888 .....	698 45	.....	
D. Ulyott.....	1881 to 1887 .....	547 68	.....	
Green & Ellis.....	1881 to 1883, 1885, 1888 and 1889	157 01	.....	
A. W. Parkin .....	1884, 1885, 1888, 1890 and 1891..	65 92	.....	
The Dixon Estate.....	1883.....	137 50	.....	
Alfred McDonald.....	1888 .....	40 80	.....	
John Parkin.....	1889.....	13 00	.....	
Gilmour & Co.....	1893.....	690 58	.....	
The Rathbun Company....	1893 .....	1,846 57	.....	
			6,058 34	

EDWARD T. SMITH,  
*Collector of Slide and Boom Dues.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.



THE DRY DOCK AT ESQUIMALT.

No. 8.—STATEMENT of Dues and other charges collected during the year ended 30th June, 1898.

NAME OF VESSEL DOCKED.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges	Total.
		From	To			
		1897.	1897.	\$ cts.	\$ cts.	\$ cts.
H. M. S. Amphion.....	4,300	Sept. 24..	Oct. 2..	Working expenses....		429 64
H. M. S. Pheasant... . .	755	Oct. 26..	Nov. 9..	do .....		610 98
		1898.				
H. M. S. Icarus.....	970	Jan. 8..	Jan. 15..	do .....		306 83
H. M. S. Leander.....	4,300	do 17..	do 22..	do .....		254 39
H. M. S. Phaeton.....	4,300	do 24..	do 29..	do .....		256 86
H. M. S. Virago.....	265	do 31..	Feb. 18..	do .....		809 39
H. M. S. Sparrow Hawk.....	265	do 31..	do 18..	do .....		
H. M. S. Egeria.....	940	Feb. 22..	March 7..	do .....		573 09
Gov. Str. Quadra.....	573	Mar. 17..	do 23..	450 00	3 00	453 00
Str. Titania.....	3,640	April 22..	April 27..	852 00	40 00	892 00
Str. Pakshan .....	1,970	do 29..	May 7..	980 00	5 40	985 40
H. M. S. Amphion.....	4,300	May 7..	do 13..	Working expenses....		298 74
Ship J. B. Brown .....	1,551	do 14..	do 15..	} 350 00	1 00	351 00
Str. Cutch .....	324	do 14..	do 15..			
Water supplied to McDermot & Yorke.....						6 60
						\$6,227 92

EDWARD T. SMITH,  
*Collector of Public Works Revenue.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.

# Department of Public Works.

## THE DRY DOCK AT LEVIS.

No. 9.—STATEMENT of Dues and other charges collected during the year ended  
30th June, 1898.

NAME OF VESSEL DOCKED.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges	Total.
		From	To			
		1897.	1897.	\$ cts.	\$ cts.	\$ cts.
Turret Bay .....			Entry Fee.	200 00		200 00
Acadia .....	5,442	June 5..	July 7..	5,282 88	20 25	5,303 13
Turret Bay .....	2,211	July 8..	do 18..	1,142 20	12 00	1,154 20
Derwent Holme .....			Entry Fee.	200 00		200 00
		1896.	1896.			
Coal Cargo Turret Cape .....	250	June 4..	June 30..	292 45		292 45
		1897.	1897.			
Derwent Holme .....	2,107	Aug. 9..	Sept. 27..	4,714 86	10 50	4,725 36
Arabia. ....			Entry Fee.	200 00		200 00
do .....	5,445	Oct. 8..	Oct. 24..	2,742 40	62 00	2,804 40
Turret Cape. ....			Entry Fee.	200 00		200 00
		1897.	1898.			
do .....	1,827	Nov. 28..	April 27..	1,300 00	26 00	1,326 00
Turret Chief. ....			Entry Fee.	200 00		200 00
Livonian. ....			do do	200 00		200 00
Turret Chief. ....	1,881	May 28, '98.	July 1..	3,027 93	6 50	3,034 43
				\$19,702 72	\$137 25	\$19,839 97

EDWARD T. SMITH,  
*Collector of Public Works Revenue.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.



THE DRY DOCK AT KINGSTON.

No. 10.—STATEMENT of Dues and other charges collected during the year ended 30th June, 1898.

NAME OF VESSEL DOCKED.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges	Total.
		From.	To			
		1897.	1897.	\$ cts.	\$ cts.	\$ cts.
Str. Tecumseh .....	839 <sup>67</sup>	July 2....	July 3....	133 96	10 50	144 46
do Columbian.....	703 <sup>90</sup>	do 3....	do 4....	120 39	.....	120 39
Tug Mary .....	20	do 10....	do 11....	20 00	5 40	25 40
do Jessie Hall.....	29	Aug. 9....	Aug. 9....	20 00	.....	20 00
do Bronson.....	70	do 11....	do 11....	20 00	.....	20 00
Barge Star .....	321	do 18....	do 18....	32 10	.....	32 10
do Wheat Bin.....	320	do 23....	do 26....	72 00	.....	72 00
do Hector.....	539	do 26....	do 27....	51 95	5 00	56 95
Tug Walker.....	138 <sup>58</sup>	do 31....	Sept. 1....	20 00	.....	20 00
Str. Resolute.....	371 <sup>80</sup>	Sept. 11....	do 12....	37 18	.....	37 18
do D. D. Calvin.....	749 <sup>53</sup>	do 13....	do 14....	88 70	10 50	99 20
do Seguin .....	818 <sup>07</sup>	do 15....	do 15....	65 90	.....	65 90
do Rival .....	125 <sup>14</sup>	do 16....	do 17....	40 00	.....	40 00
Barge Acadia.....	374	do 20....	do 20....	37 40	.....	37 40
do Alberta.....	313 <sup>92</sup>	do 21....	do 22....	31 39	.....	31 39
Tug Active .....	301 <sup>17</sup>	do 23....	do 24....	30 11	5 00	35 11
Str. Orion .....	846 <sup>43</sup>	do 25....	do 26....	96 94	5 00	101 94
do Inter-Ocean .....	1,068 <sup>76</sup>	do 27....	Entrance fee	100 00	.....	100 00
do do .....	.....	do 27....	Oct. 1....	128 05	20 50	148 55
do Chas. A. Street .....	512 <sup>37</sup>	Oct. 2....	do 6....	110 62	5 00	115 62
Ship Minnedosa.....	1,041	do 7....	do 7....	77 05	.....	77 05
Tug Shanley.....	50	do 8....	do 9....	20 00	.....	20 00
Barge Cornwall.....	586 <sup>96</sup>	do 13....	do 13....	54 29	.....	54 29
Str. D. D. Calvin .....	749 <sup>53</sup>	do 15....	do 16....	88 70	.....	88 70
do Bannockburn .....	1,619 <sup>56</sup>	do 18....	do 21....	276 02	.....	276 02
Tug Reginald.....	186 <sup>26</sup>	do 25....	do 26....	20 00	15 50	35 50
Barge Toronto.....	335	Nov. 9....	Nov. 12....	93 50	.....	93 50
do Montreal.....	362	do 13....	do 16....	76 20	.....	76 20
Tug W. H. Browne .....	470 <sup>97</sup>	do 20....	do 24....	107 10	21 00	128 10
Barge Kildonan.....	522 <sup>78</sup>	do 30....	Dec. 3....	111 14	.....	111 14
Tugs Thomson and Jessie Hall.....	{ 185 <sup>05</sup> 29	Dec. 4....	do 5....	.....	.....	.....
		do 4....	do 5....	41 40	.....	41 40
Str. Rosedale .....	.....	Entrance Fee.		100 00	.....	100 00
do North King.....	872 <sup>95</sup>	Dec. 13....	Dec. 29....	160 00	.....	160 00
do Rosedale .....	1,506	Entrance Fee.		100 00	.....	100 00
do W. H. Browne.....	.....	Unwatering Dock.		.....	10 50	10 50
1898.						
do Rosedale .....	.....	Dec. 30....	June 21....	4,491 57	66 00	4,557 57
1898.						
do New York .....	294 <sup>87</sup>	June 22....	do 25....	100 25	.....	100 25
Barge Detroit.....	350	do 27....	do 28....	94 50	.....	94 50
				7,268 41	179 90	7,448 31

EDWARD T. SMITH,  
*Collector of Public Works Revenue.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 30th September, 1898.

Department of Public Works.

PART VII

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LIST OF SOME OF THE ACTS OF PARLIAMENT

PASSED AT THE SESSION OF 1898

HAVING

REFERENCE TO THE DEPARTMENT OF PUBLIC WORKS  
OR WORKS UNDER ITS CHARGE





## Department of Public Works.

LIST of some of the Public Acts of the Parliament of Canada passed at the Third Session of the Eighth Parliament, closed by Prorogation on the 13th Day of June, 1898, having reference to the Public Works Department or works under its charge (61-62 Victoria).

Subject.	Full Title of the Statute.	Chapter.	Page in Statute Book.
Sums granted to Her Majesty for the financial year ending 30th June, 1898, and the purposes for which they are granted.	An Act for granting to Her Majesty certain sums of money required for defraying certain expenses of the public service for the financial years ending respectively the 30th June, 1898, and the 30th June, 1899, and for other purposes relating to the public service.	1	3
Mode of payment of parliamentary grants in aid of construction of public works.	An Act respecting the payment of grants in aid of the construction of public works.	12	75
Certain securities, guaranteed bonds or policies supplied by public officers.	An Act further to amend the Act respecting public officers.	16	91
Respecting abolition of Superannuation and Retirement Fund.	An Act to provide for the abolition of the Civil Service Superannuation Act, and for the retirement of members of the Civil Service.	17	93
Respecting the protection of navigable waters.	An Act further to amend the Act respecting the protection of navigable waters.	41	175
Respecting advances to the Harbour Commissioners of Montreal.	An Act to grant further aid to the Harbour Commissioners of Montreal.	47	211
Authority to Quebec Harbour Commissioners to borrow money.	An Act to authorize the Quebec Harbour Commissioners to borrow money.	48	213
As to authority to construct certain works.	An Act respecting the Harbour of the City of St. John, in the Province of New Brunswick.	115	249

N.B.—Tariff of tolls, authorized to be levied by the Upper Ottawa Improvement Company, during the season of 1898. Order in Council passed on the 14th of March, 1898, *vide* Statutes of Canada, page lxxxvii.

Rules and regulations for the maintenance, management, proper use and protection of Government slides, &c., on the River St. Maurice and tributaries. Order in Council passed on the 21st March, 1898, *vide* Statutes of Canada, page lxxxvii.

Tariff of tolls authorized to be levied by the Rouge Boom Company during the season of 1898. Order in Council passed on the 23rd May, 1898, *vide* Statutes of Canada, page lxxxvii.

J. A. CHASSÉ,  
*Law Clerk.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 1st December, 1898.





# Department of Public Works.

## STATEMENTS

SHOWING

1st.—CONTRACTS LET BY THE DEPARTMENT OF PUBLIC WORKS OF CANADA, FROM  
THE 30TH JUNE, 1897, TO THE 30TH JUNE, 1898.

2nd.—PROPERTY PURCHASED OR SOLD BY THE DEPARTMENT OF PUBLIC WORKS,  
DURING THE FISCAL YEAR ENDED 30TH JUNE, 1898.

3rd.—PROPERTY LEASED TO AND BY THE DEPARTMENT OF PUBLIC WORKS, DURING  
THE FISCAL YEAR ENDED 30TH JUNE, 1898.





# Department of Public Works.

DEPARTMENT OF PUBLIC WORKS OF CANADA,  
OTTAWA, 1st December, 1898.

SIR,—I have the honour to send you herewith the following statements concerning the transactions of the department during the last fiscal year with respect to contracts and property, and which are intended to form part of the Annual Report, 1897-98, namely:—

No. 1.—Statement of contracts let by this department during the fiscal year ended 30th June last.

No. 2.—Statement of property purchased and sold by this department during the same period.

No. 3.—Statement of property leased to and by this department during the same period.

I have the honour to be, sir,

Your obedient servant,

J. A. CHASSÉ,

*Law Clerk.*

E. F. E. ROY, Esq.,

Secretary of the Department of Public Works  
of Canada.

NO. 1.—CONTRACTS let by the Department of Public Works of Canada from the 30th June, 1897, to the 30th June, 1898.

Works.	Names of Contractors.	Date of Contract.	Amount.
PUBLIC BUILDINGS.			\$ cts.
<i>Government House, Parliament and Departmental Buildings.</i>			
Parliament and Departmental Buildings—Supply of coal.....	John Heney & Son.....	July 22, 1897	24,803 98
Parliament and Departmental Buildings and Grounds—Removal of snow.....	Anthony Butler.....	Nov. 30, 1897	{ For season 350 00
Parliament and Departmental Buildings—Supply of ice.....	D. N. Charlebois.....	Feb. 10, 1898	350 00
Parliament and Departmental Buildings—Fire electric pumps.....	Ahearn & Soper.....	Nov. 18, 1897	38,925 00
Parliament and Federal Public Buildings—Electric wiring.....	do.....	Jan. 29, 1898	Schd. of rates
Departmental Public Buildings—Current for lighting	The Ottawa Electric Co..	do 19, 1898	do
Public Buildings—Supply of firewood.....	James White.....	Dec. 6, 1897	7,550 00
Parliament Hill—Maintenance of public grounds...	J. N. Grieves.....	Feb. 2, 1898	3,300 00
Public Building—West Block—Supply of copper for new roof.....	Lewis Bros. & Co.....	June 2, 1898	Schd. of rate
Public Building—West Block—Construction of a steel roof over a portion of.....	Paquet & Godbout.....	Nov. 26, 1897	20,000 00
Rideau Hall—Removal of snow.....	Thomas Whelan.....	do 30, 1897	{ For season 319 00
do Maintenance of public grounds.....	Hickey, Sorley & Sims..	Aug. 26, 1897	2,340 00



NO. I.—CONTRACTS let by the Department of Public Works, &c.—*Continued.*

Works.	Names of Contractors.	Date of Contract.	Amount.
PUBLIC BUILDINGS— <i>Continued.</i>			\$ cts.
<i>Nova Scotia.</i>			
Amherst post office building—Supply of coal.....	The Canada Coal & Ry. Co., Ltd .....	Sept. 16, 1897	209 25
Annapolis do do .....	do do .....	Aug. 6, 1897	147 37
Antigonish do do .....	James Kenna .....	do 4, 1897	69 60
Arichat do do .....	do .....	do 4, 1897	70 00
do savings bank do .....	do .....	do 4, 1897	35 00
do custom-house do .....	do .....	do 4, 1897	35 00
Baddeck post office do .....	Burchell Bros. ....	do 4, 1897	82 50
Dartmouth post office do .....	Intercolonial Coal Mining Co. ....	do 17, 1897	59 11
Halifax Dominion building do .....	do do .....	do 17, 1897	656 64
do Asst. Rec. Gen'l's office do .....	do do .....	do 17, 1897	53 10
do examining warehouse do .....	S. Cunard & Co. ....	do 17, 1897	130 50
Lunenburg post office do .....	Benjamin Anderson .....	do 6, 1897	140 00
New Glasgow post office do .....	Acadia Coal Co., Ltd. ....	do 5, 1897	151 20
North Sydney do do .....	Burchell Bros. ....	do 4, 1897	104 55
Pictou do do .....	Acadia Coal Co., Ltd. ....	do 5, 1897	82 32
do custom-house do .....	do do .....	do 5, 1897	115 24
Sydney post office do .....	Burchell Bros. ....	do 4, 1897	178 17
Truro do do .....	Acadia Coal Co., Ltd. ....	do 5, 1897	224 00
Windsor do do .....	Fred. W. Dimock. ....	do 5, 1897	176 60
do Construction of a drill hall .....	William Lawrence .....	June 14, 1898	4,575 00
Yarmouth post office—Supply of coal .....	Killam Bros. ....	Aug. 2, 1897	220 50
<i>Prince Edward Island.</i>			
Charlottetown Dominion building—Supply of coal ..	A. Down .....	Aug. 9, 1897	438 93
Montague post office—Supply of coal .....	George Wightman .....	do 10, 1897	45 14
Summerside do do .....	Robert T. Holman .....	do 9, 1897	266 80
<i>New Brunswick.</i>			
Bathurst post office—Supply of coal .....	Robert Seely .....	Aug. 10, 1897	352 95
Chatham do do .....	R. R. Call .....	do 9, 1897	253 80
Dalhousie do do .....	do .....	do 9, 1897	55 63
do do do .....	Robert Seely .....	do 10, 1897	141 00
Fredericton do do .....	do .....	do 10, 1897	264 90
Moncton do do .....	The Canada Coal & Ry. Co. ....	do 6, 1897	211 10
Newcastle do do .....	R. R. Call .....	do 9, 1897	231 95
St. John do do .....	Robert Seely .....	do 10, 1897	516 56
do savings bank do .....	do .....	do 10, 1897	220 50
do custom-house do .....	do .....	do 10, 1897	15 57
do savings bank do .....	R. P. & W. F. Starr .....	do 10, 1897	24 88
do custom-house do .....	do .....	do 10, 1897	1,002 18
St. Stephen post office do .....	C. H. Clarke .....	do 9, 1897	110 00
Sussex do do .....	Robert Seely .....	do 10, 1897	192 30
Tracadie lazaretto do .....	R. R. Call .....	do 9, 1897	775 70
Woodstock post office do .....	Robert Seely .....	do 10, 1897	207 54
<i>Quebec.</i>			
Aylmer post office—Supply of coal .....	C. C. Ray & Co. ....	Aug. 4, 1897	151 80
Coaticook do do .....	W. C. Webster & Son. ....	do 17, 1897	225 75
Fraserville do do .....	Nap. Dion .....	do 9, 1897	297 00
Hull do do .....	C. C. Ray & Co. ....	do 4, 1897	267 75
Joliette do do .....	L. N. Ducondu .....	do 16, 1897	238 28
Lachine do do .....	Bridge Co.'s Coal Com'te. ....	do 11, 1897	89 15
Laprairie do do .....	Ludger Beauvais .....	do 6, 1897	102 52
Montreal do do .....	L. Cohen & Son. ....	do 6, 1897	} 24 68
do northern receiving house—Supply of coal ..	do .....	do 6, 1897	
do revenue building do .....	do .....	do 6, 1897	147 46
do custom-house do .....	T. F. Moore .....	do 6, 1897	521 40
do examining warehouse do .....	do .....	do 6, 1897	1,516 80
do post office do .....	do .....	do 6, 1897	590 28

# Department of Public Works.

No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Continued.*

Works.	Names of Contractors.	Date of Contract.	Amount.
PUBLIC BUILDINGS— <i>Continued.</i>			
<i>Quebec—Concluded.</i>			
do do Supply of electric current for lighting .....	The Royal Electric Co...	Feb. 25, 1898	Schd. of rates
Quebec culler's office—Supply of coal .....	Joseph Gingras.....	Aug. 6, 1897	206 21
do marine agency do .....	do .....	do 6, 1897	274 11
do immigration office do .....	do .....	do 6, 1897	3 50
do post office do .....	do .....	do 6, 1897	513 19
do custom-house do .....	Archer & Co.....	do 9, 1897	412 00
do examining wareh'se do .....	do .....	do 9, 1897	504 50
Richmond post office do .....	M. Steel & Co.....	do 18, 1897	210 00
Rimouski post office—Supply of coal .....	Nap. Dion.....	Aug. 9, 1897	271 85
St. Henri do do .....	T. F. Moore.....	do 6, 1897	100 00
St. Hyacinthe do do .....	C. Rouleau.....	do 18, 1897	136 60
St. Jérôme do do .....	T. F. Moore.....	do 6, 1897	139 75
St. John's do do .....	Bisset & Donaghy.....	do 11, 1897	119 60
St. Roch do do .....	George Madden.....	do 9, 1897	55 00
Sherbrooke do do .....	Godère Fils & Cie. ..	do 10, 1897	42 70
do do do .....	J. S. Mitchell & Co.....	do 10, 1897	242 23
Sorel do do .....	Leclaire & Lavallée .....	July 28, 1897	189 60
Three Rivers do do .....	Zéphirin Marchand .....	Aug. 11, 1897	157 50
do do do .....	do .....	do 11, 1897	237 71
Valleyfield do do .....	Dion & Guindon .....	do 26, 1897	46 00
West Farnham do do .....	Joseph Séguin & Co.....	do 26, 1897	44 00
<i>Ontario.</i>			
Almonte post office—Supply of coal .....	T. R. White.....	Aug. 10, 1897	132 71
Barrie do do .....	Johnston & Sargeant... ..	do 10, 1897	227 50
Belleville do do .....	People's Coal Co .....	do 13, 1897	276 00
Berlin do do .....	Kloepfer & Co.....	do 12, 1897	231 82
Brampton do do .....	R. J. McCallum .....	do 11, 1897	142 83
Brantford do do .....	Thomas Elliott.....	do 12, 1897	292 76
Brockville do do .....	George E. Shields... ..	do 11, 1897	207 00
Carleton Place post office do .....	J. H. Greig.....	do 19, 1897	99 00
Chatham do do .....	A. R. Crow.....	do 12, 1897	168 23
Cobourg do do .....	George Plunkett.....	do 12, 1897	193 64
Cornwall do do .....	Flock Bros .....	do 11, 1897	250 00
Dundas do do .....	Charles Sturrock.....	do 12, 1897	16 48
Galt do do .....	McAuslan & Brownlee ..	do 11, 1897	148 75
Gananoque do and custom-house supply of coal .....	The Rathbun Co .....	do 11, 1897	223 60
Goderich do do .....	William Lee.....	do 13, 1897	183 65
Guelph do do .....	Frank Frank .....	do 11, 1897	159 89
Hamilton do do .....	People's Coal Co.....	do 18, 1897	770 90
do do do .....	do .....	do 13, 1897	
Kingston do do .....	W. G. Craig & Co.....	do 10, 1897	169 65
do custom-house and examining warehouse supply of coal .....	do .....	do 10, 1897	308 52
Lindsay post office—Supply of coal .....	McLennan & Co.....	do 11, 1897	151 80
London do do .....	Bowman & Co .....	do 11, 1897	356 84
do do do .....	John M. Daly .....	do 11, 1897	17 50
do custom-house do .....	do .....	do 11, 1897	14 00
do do do .....	Campbell & Chantler... ..	do 12, 1897	366 04
Napanee post office do .....	J. R. Dafoe. ....	do 14, 1897	187 25
Niagara Falls do .....	R. Coulson .....	do 18, 1897	183 60
Orangeville do .....	Joseph R. Lathwell .....	do 12, 1897	114 94
Orillia do .....	R. J. Sanderson .....	do 13, 1897	150 25
Ottawa experimental farm—Supply of coal .....	C. C. Ray & Co .....	Aug. 4, 1897	810 25
do Langevin block, post office building, printing bureau, geological and fisheries museums, Cartier square, &c.—Removal of snow .....	Shea & Murphy .....	Nov. 30, 1897	280 00
Ottawa experimental farm—Construction of laboratory .....	John James Lyons .....	June 10, 1898	5,973 00
Pembroke post office—Supply of coal .....	Dunlop & Co.....	Aug. 12, 1897	194 20
Peterborough post office—Supply of coal .....	A. J. McClellan .....	do 11, 1897	147 41
do custom-house do .....	do .....	do 11, 1897	109 00



No. 1.—CONTRACTS let by the Department of Public Works, &c.—Continued.

Works.			Names of Contractors.		Date of Contract.	Amount.
PUBLIC BUILDINGS—Continued.						\$ cts.
Ontario.						
Petrolia	post office	do	R. & J. Jackson	do	12, 1897	118 02
Port Arthur	do	do	Harstone, Windatt & Co.	do	16, 1897	135 01
Port Hope	do	do	G. A. Smith	do	19, 1897	187 25
Prescott	do	do	James Buckley	do	16, 1897	103 80
do	custom-house	do	do	do	16, 1897	181 65
St. Catharines	post office	do	E. C. Rogers	do	13, 1897	201 42
St. Thomas	do	do	People's Coal Co.	do	13, 1897	150 00
Smith's Falls	do	do	Hiram A. Crate	do	14, 1897	118 23
Stratford	do	do	Mowat & Johnson	do	13, 1897	415 61
Strathroy	do	do	Alexander Reed	do	12, 1897	149 85
Toronto	do	do	People's Coal Co	do	13, 1897	709 28
do	custom-house	do	do	do	13, 1897	316 29
do	examining warehouse	do	do	do	13, 1897	748 13
do	revenue office	do	do	do	13, 1897	255 46
Trenton	post office	do	Charles Crowe	do	13, 1897	180 00
Walkerton	do	do	S. W. Vogan	do	12, 1897	208 50
Windsor	do	do	John & Timothy Hurley	do	14, 1897	13 00
do	do	do	Robert J. Cleminson	do	14, 1897	452 25
Manitoba.						
Brandon experimental farm—Supply of coal			Purdon & Smart	Aug.	16, 1897	15 00
do do do			John Hanbury	do	25, 1897	126 00
do post office			do	do	25, 1897	525 00
Portage Laprairie public building—Construction of a heating apparatus			Purdy, Mansell & Mash-inter	Feb.	11, 1898	1,019 00
Winnipeg post office—Supply of coal			Elie Chamberland	Aug.	16, 1897	2,367 49
do custom-house do			D. E. Adams	do	16, 1897	584 50
do immigration office and sheds—Supply of coal			do	do	16, 1897	250 59
Winnipeg Indian office and crown timber office—Supply of coal			do	do	16, 1897	233 80
Winnipeg examining warehouse—Supply of coal			do	do	16, 1897	384 10
North-west Territories.						
Calgary immigration shed—Supply of coal			W. R. Hull	Sep.	7, 1897	26 80
do post office do			do	do	7, 1897	448 51
do immigration shed do			Thomas O'Brien	Aug.	19, 1897	89 47
Calgary court-house—Supply of coal			W. R. Hull	Sept.	7, 1897	382 35
do post office do			Thomas O'Brien	Aug.	19, 1897	35 98
do court-house do			do	do	19, 1897	33 50
do registry office do			do	do	19, 1897	77 30
Edmonton Dominion land office—Supply of coal			Samuel Moran	do	23, 1897	101 44
Indian Head experimental farm do			George Thompson	do	16, 1897	201 00
Lethbridge post office and court-house do			Alberta Ry. Coal Co.	Sept.	4, 1897	140 00
Macleod court-house—Supply of coal			do	do	4, 1897	75 00
do custom-house do			do	do	4, 1897	
Moosomin court-house do			Thomas H. Bristow	do	11, 1897	338 38
Regina do			Rembler Paul	Aug.	16, 1897	600 00
do post office do			do	do	16, 1897	200 00
do land titles office do			do	do	16, 1897	166 75
do Dominion land do			do	do	16, 1897	150 00
Wolseley court-house do			Magee & Thompson	do	24, 1897	185 45
British Columbia.						
Victoria post office—Fittings			Weiler Bros.	Nov.	15, 1897	3,960 00
do public building—Construction of a heating apparatus			Joseph Lamarche	Dec.	9, 1897	4,294 00

# Department of Public Works.

## No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Concluded.*

Works.	Names of Contractors.	Date of Contract.	Amount.
PUBLIC BUILDINGS— <i>Concluded.</i>			\$ cts.
<i>British Columbia—Concluded.</i>			
do construction of quarters for sergeant-major, store-keeper and caretaker of drill hall..	Robert Tait.....	do 7, 1897	4,260 00
do public building—Construction of two electric elevators.....	The Fensom Elevator Works .....	Feb. 3, 1898	6,687 00
do public building savings bank—Steel burglar proof vault.....	J. & J. Taylor.....	Mar. 29, 1898	17,645 00
HARBOURS AND RIVERS.			
<i>Nova Scotia.</i>			
Judique—Construction of a breakwater.....	Simmons & Burpee.....	Apr. 4, 1898	14,143 00
Margaree—Extension to pier .....	Reid & Chisholm.....	Feb. 25, 1898	3,775 00
Oyster Pond—Beach protection work.....	John McMillan.....	do 23, 1898	1,846 00
Trout Cove—Extension to breakwater.....	Reid, Reid & Archibald.	Apr. 12, 1898	3,896 00
<i>Prince Edward Island.</i>			
Tignish—Construction of works in the harbour of...	The firm of James Myrick & Co.....	Mar. 7, 1898	6,770 00
West Point—Reconstruction and repair to wharf...	Hugh McDonald & W. C. Moffatt.....	Dec. 17, 1897	9,500 00
<i>New Brunswick.</i>			
Two Rivers—Construction of wharf.....	Cameron, Cameron, Cameron & Alcorn.....	Apr. 6, 1898	1,875 00
<i>Quebec.</i>			
Anse aux Gascons—Construction of a breakwater...	P. T. C. Dumais.....	Feb. 1, 1898	11,494 00
<i>Ontario.</i>			
Meaford—Construction of a pile work in the harbour of.....	James Sparling.....	Apr. 20, 1898	2,530 00
<i>North-west Territories.</i>			
Edmonton—Masonry of the proposed bridge across Saskatchewan River.....	Frs. Lemoine.....	Aug. 17, 1897	36,500 00
<i>Vessels, Dredges and Plant.</i>			
Supply of materials for the construction of hull for dredge.....	The Edward Kavanagh Co .....	Dec. 27, 1897	20,460 00
do do do .....	J. W. Wurtele & Co.....	Jan. 11, 1898	20,460 00
Construction of three dredges.....	M. Beatty & Sons.....	Apr. 15, 1898	22,960 00
TELEGRAPH AND SIGNAL SERVICE.			
Peashte Bay to Natashquan, P.Q.—Construction of a telegraph line.....	L. P. DeCourval..	Aug. 18, 1897	p. m. 105 00
Aguanus to Natashquan, P.Q.—Construction of a telegraph line.....	do .....	Nov. 15, 1897	do 105 00

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 1st December 1898,

J. A. CHASSÉ,  
*Law Clerk.*



No. 2.—STATEMENT of Properties purchased or sold by the Department of Public Works during the fiscal year ended 30th June, 1898.

Date of Conveyance.	Vendors.	Purchaser.	Description of Property.	For what purpose.	Area.	Price.
1897.						
July 3....	Elie Lavoie.....	Her Majesty	Land, wharf and shed at "Point aux Esquimaux," Saguenay County, P.Q.....	Government purposes....		cts.
Aug. 6....	Andrew Sutherland and uxor.....	do ..	Land and premises, parts of town lots Nos. 8 and 9 South-west side of Thames street, Ingersoll, Ont. ....	Erection of a public building.....		700 00
do 12....	Elizabeth Duncan and husband.....	do ..	Land and wharf at Hilton, Algoma District, Ont.....	Wharf purposes.....	2 $\frac{2}{10}$ of an acre, more or less....	3,900 00
Oct. 25....	Provincial Government of P. E. I. ....	do ..	"Red Point," "Haggarty," "Cranberry" wharves or piers on Hillsborough River, P. E. I. ....	do ..		5,000 00
1898.						
Jan. 13 ...	William T. Rees. ....	do ..	Land and premises, Liverpool, Nova Scotia, eastern corner of Market and Main streets....	Erection of a public building.....	58 ft. by 100 ft....	1,600 00
do 14....	Hector Lemieux.....	do ..	Telegraph line at "Isle aux Coudres," P. Q.....	Government purposes....		122 25
March 4....	Ida Mary Agnew.....	do ..	Lot No. 16, Block J. River lot 78, Prince Albert Settlement, N. W. T. ....	Site for court house.....		400 00
June 16....	John K. McDonald et al.	do ..	Parcel of land, wharf and buildings in Whyconomagh, N.S.	Government purposes....	$\frac{2}{3}$ of an acre, more or less.....	5,000 00
do 17....	Henriette Lord et al ...	do ..	Lot No. 182 with premises, Berthier, P. Q. ....	do ..		2,000 00
do 17....	J. A. Lapalme.....	do ..	Lot No. 182 with premises, Berthier, P. Q.....	do ..		1,200 00

Department of Public Works.

Date of Lease.	Lessor.	Lessee.	Property Leased.	For what purpose.	Duration of Lease.	Annual Rental.
1897.						
Aug. 4.	C. C. Ray	Her Majesty	Ottawa, Rideau Canal basin, wooden shed	Storage of coal, Ottawa public buildings.	1 year	\$ 400 per annum.
do 12.	Her Majesty	Barrington Township Telephone Co.	Telegraph line between Barrington, Newellton and Cape Sable lighthouse, N.S.	Private enterprise	During pleasure.	\$ 1 do
do 13.	Slater Estate	Her Majesty	Lot of land adjoining Government workshop on Wellington Street, Ottawa.	Storage of lumber	do	\$ 20 per month.
Oct. 19.	R. N. Slater <i>et al</i>	do	Ottawa, Sparks Street, portion of "Slater Block"	Government purposes	1 year	\$1,700 per annum.
Nov. 15.	Slater Estate	do	do	do	During pleasure.	\$ 12 per month.
1898.						
Jan. 11.	Her Majesty	Ottawa Electric Co.	Ottawa, Chaudière Island, small reserve marked "Pa."	Private enterprise	20 years	\$ 10 per annum.
April 4.	do	Cyrille Robitaille	St. Joseph de Lévis, P.Q., piece of land 60 by 24 ft.	do	During pleasure.	\$ 1 do
May 12.	do	John Reid	New Westminster, B.C., Lot No. 1, Block 13, N.E. corner of Begbie and Columbia Sts., 66 by 132 ft.	do	10 years	\$ 50 do

J. A. CHASSÉ,  
*Late Clerk.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 1st December, 1898.





Department of Public Works.

NAMES OF THE CHIEF OFFICERS OF THE DEPARTMENT OF PUBLIC WORKS

WITH

DATES OF APPOINTMENT, &c., FROM 1841 TO 1898





# Department of Public Works

## NAMES OF THE CHIEF OFFICERS.

The names with the dates of the appointment, &c., of the principal Officials of the Department of Public Works, from 1841 to 1898.

Names.	Capacity or Office.	Date of Appointment. Served	
		From	To
<i>Under Statute 4-5 Vic., Cap. 38.</i>			
CORPORATION BOARD OF WORKS.			
Killaly, Hon. H. H.	Chairman . . . . .	Dec.	29, 1841
Daly, Hon. D.			
Harrison, S. B.	Members . . . . .	Oct.	3, 1844
Sullivan, R. B.			
Davidson, J., Esq.	Secretary . . . . .	Aug.	17, 1841
Begly, Thomas A.			
Keefer, Samuel.	Chief Engineer . . . . .	do	17, 1841
Rubidge, F. B.	Architect and Assistant Chief Engineer . . . . .	Dec.	15, 1841
NEW BOARD OF WORKS.			
Killaly, Hon. H. H.	Chairman . . . . .	Oct.	4, 1844
Daly, Hon. D.			
Draper, Hon. W. H.	Members . . . . .	June	8, 1846
Morris, Hon. W.			
Papineau, Hon. D. B.			
<i>Under Statute 9th Vic., Cap. 37, &amp;c.</i>			
Robinson, Hon. W. B.	Chief Commissioner . . . . .	June	22, 1846
Taché, Hon. E. P.	do . . . . .	March	11, 1848
Chabot, Hon. J.	do . . . . .	Dec.	13, 1849
Merritt, Hon. W. H.	do . . . . .	April	8, 1850
Bourret, Hon. J.	do . . . . .	Feb.	12, 1851
Young, Hon. John.	do . . . . .	Oct.	28, 1851
Chabot, Hon. J.	do . . . . .	Sept.	23, 1852
Lemieux, Hon. F.	do . . . . .	Jan.	27, 1855
Alleyn, Hon. C.	do . . . . .	Nov.	26, 1857
Holton, Hon. L. H.	do . . . . .	Aug.	2, 1858
Sicotte, Hon. L. V.	do . . . . .	do	7, 1858
Rose, Hon. John.	do . . . . .	Jan.	11, 1859
Cauchon, Hon. Jos.	Commissioner . . . . .	June	13, 1861
Tessier, Hon. U. J.	do . . . . .	May	24, 1862
Drummond, Hon. L. T.	do . . . . .	do	28, 1863
Laframboise, Hon. M.	do . . . . .	July	24, 1863
Chapais, J. C.	do . . . . .	March	30, 1864
Casgrain, Hon. Chas. Eus.	Second Commissioner . . . . .	July	9, 1846
Cameron, Hon. M.	Assistant Commissioner . . . . .	March	11, 1848
Wetenhall, John S., Esq.	do . . . . .	Feb.	2, 1850
Bourret, Hon. Jos.	do . . . . .	April	17, 1850
Killaly, Hon. H. H.	do . . . . .	Feb.	12, 1851
Keefer, Samuel.	Deputy Commissioner . . . . .	May	6, 1859
Trudeau, Toussaint.	do . . . . .	March	8, 1864
Begly, Thos. A.	Secretary . . . . .	Feb.	10, 1841
Trudeau, Toussaint.	do . . . . .	Dec.	13, 1859
Braun, Frederick	do . . . . .	March	8, 1864
age, John.	Chief Engineer . . . . .	Oct.	31, 1853



The names with the dates of the appointment, &c., of the principal Officials of the Department of Public Works, from 1841 to 1898.—*Concluded.*

Names.	Capacity or Office.	Date of Appointment. Served	
		From	To
<i>Under Statute 31 Vic., Cap. 12.</i>			
McDougall, Hon. Wm.	Minister	July 1, 1867	Dec. 7, 1869
Langevin, C.B., Hon. Hector L.	do	Dec. 8, 1869	Nov. 6, 1873
Mackenzie, Hon. Alexander.	do	Nov. 7, 1873	Oct. 16, 1878
Tupper, C.B., K.C.M.G., Sir Charles.	do	Oct. 17, 1878	May 19, 1879
Langevin, C.B., K.C.M.G., Sir Hector L.	do	May 20, 1879	Aug. 11, 1891
Smith, Hon. Frank.	Acting Minister	Aug. 14, 1891	Jan. 10, 1892
Ouimet, Hon. Joseph Aldric	Minister	Jan. 11, 1892	April 30, 1896
Desjardins, Hon. Alphonse.	do	May 1, 1896	July 12, 1896
Tarte, Hon. J. Israel.	do	July 13, 1896	
Trudeau, Toussaint.	Deputy Minister	May 29, 1868	Oct. 1, 1879
Baillargé, G. F.	do	Oct. 4, 1879	Dec. 31, 1890
Gobeil, A.	do	Jan. 1, 1891	
Braun, Frederick.	Secretary	July 1, 1867	Sept. 30, 187
Chapleau, S.	do	Oct. 1, 1879	Nov. 4, 1880
Ennis, F. H.	do	Nov. 5, 1880	Jan. 13, 1885
Gobeil, A.	do	Jan. 23, 1885	Dec. 31, 1890
Roy, E. F. E.	do	Jan. 1, 1891	
McPherson, D. A.	Assistant Secretary	do 18, 1891	April 11, 1893
Desroches, Rodolphe Charles.	do	do 8, 1896	
Perley, H. F.	Chief Engineer	Nov. 25, 1880	July 10, 1891
Baillargé, G. F.	Assistant Chief Engineer	July 5, 1871	do 4, 1879
Coste, Louis.	Chief Engineer.	do 26, 1892	
Scott, Thos. S.	Chief Architect.	May 26, 1871	Oct. 30, 1881
Fuller, Thomas.	do	Oct. 31, 1881	June 30, 1897
Page, John.	Chief Engineer.	July 1, 1868	Oct. 1, 1879
Ewart, David.	Chief Architect.	Nov. 2, 1897	

Department of Public Works.

NAMES OF THE OFFICIALS EMPLOYED ON THE SLIDES AND BOOMS OF CANADA

On the 30th June, 1898

WITH

DATES OF APPOINTMENT, SALARIES, ETC.



OFFICIALS EMPLOYED ON THE SLIDES AND BOOMS.

STATEMENT showing the Names, Dates of Appointment, Salaries, &c., of Persons employed on the various Slides and Booms, on 30th June, 1898.

Name.	Date of Birth.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
<i>Collector of Slide and Boom Ducs.</i>						
E. T. Smith	Nov. 26, 1846	Collector	Ottawa	July 1, 1889	\$ 1,800 00 a year.	Date of first appointment to Crown Timber office, Ottawa, 23rd June, 1864. Clerk, Dept. of Inland Revenue, 1st July, 1870, to 30th June, 1889. Transferred to civil list with rank of first class clerk, 5th January, 1892.
F. X. Gagné	Sept. 23, 1859	Clerk	"	Dec. 16, 1897	912 50	Entered the service 13th August, 1889.
James Steen	June 17, 1830	Boatman	"	July 12, 1889	60 00 a month	Employed during the season of navigation, for 8 months each year. Date of first appointment, 26th May, 1861. Timber counter, Ottawa, for Dept. of Inland Revenue, 7th Jan., 1884, to 30th June, 1889.
John Redmond	August 2, 1833	"	"	" 12, 1889	60 00	Employed during the season of navigation, for 8 months each year. Date of first appointment, 1st May, 1872. Assistant timber counter, Ottawa, for Dept. of Inland Revenue, 7th Jan., 1884, to 30th June, 1889.
<i>Saguenay District.</i>						
<i>St. Maurice District.</i>						
L. P. Dallaire		Paymaster	Three Rivers	May 1, 1898	50 00 a month	
Cyriac Lymburner	1833	Slide master	Mouth of St. Maurice	April 25, 1881	46 67	
Jos. Page	July 7, 1845	Asst.	Cap aux Corneilles	Dec. 10, 1879	60 00	
Gédéon Brousseau		"	Shawenegan and Gros	April 7, 1896	54 16	
Arth. Pellerin		"	"	Aug. 5, 1885	33 33	
J. Dick		Boom master	Grand Mère	April 22, 1898	55 00	
M. Masson		Boom keeper	Grandes Piles	April 22, 1898	55 00	
<i>Richelieu District.</i>						
Azaire Bienvenue		Boom master	Belœil Station	Jan. 1, 1882	100 00 a year	

# Department of Public Works.

<i>Ottawa District.</i>									
G. P. Brophy.....	Feb. 24, 1846	Superintendent.....	Ottawa	July 6, 1873	2,500 00	"	<i>Ottawa River Works.</i> —In addition to the		
D. Scott.....	Feb. 15, 1830	Accountant	"	Oct. 1, 1854	1,500 00	"	above officers, &c., there are employed		
J. C. Scott.....	June 27, 1865	Measurer.....	"	April 1, 1889	3 25 a day	"	during the running season, one foreman on		
J. Kent.....	Jan. 28, 1864	Clerk.....	"	Aug. 1, 1886	3 00	"	slide at \$1.50 and one assistant foreman at		
Wm. Cain.....	April 22, 1860	Messenger.....	"	Jan. 1, 1892	1 25	"	\$1.25 a day; also 25 to 30 labourers at		
Pierre St. Pierre.....	.....	Deputy slide master.	Carillon.....	June 1, 1897	1 40	"	from \$1 to \$1.40 a working day.		
D. Noonan.....	June 17, 1840	Boom master.	Gatineau.....	Mar. 21, 1878	500 00 a year	"	Actively employed about 7 months. Oversees		
J. Soulière.....	Nov. 8, 1829	Deputy slide master.	Chaudière.....	1878	2 50 a day	"	repairs in winter.		
J. McDonell.....	Nov. 1, 1818	"	Hull.....	Mar. 1, 1877	1 25	"	"		
W. D. Sheriff.....	.....	"	Chats.....	April 26, 1898	1 25	"	Employed about 6 months.		
John Harvey.....	May 22, 1831	Slide master.....	Arnprior.....	July 12, 1882	2 50	"	Oversees repairs in winter.		
Joseph McCrea.....	Mar. 26, 1869	Boom master.	Springtown.....	May 15, 1880	300 00 a year	"	Actively employed about 7 months.		
Patrick Barry.....	Mar. 27, 1858	Slide master.....	High Falls.....	Mar. 10, 1888	1 50 a day	"	Employed about 3 months during season of		
Duncan McLaren.....	Jan. 7, 1860	Deputy slide master.	Portage du Fort	Sept. 7, 1881	456 25 a year	"	navigation.		
J. G. Poupore.....	Feb. 27, 1857	"	Black River.....	Oct. 15, 1880	480 00	"	Employed 5 months during season of naviga-		
James Steen Rowan.....	Aug. 27, 1836	"	Lower Petewawa.....	Mar. 18, 1887	480 00	"	tion. Oversees repairs in winter.		
P. O'Connor.....	.....	"	Upper Petewawa.....	Mar. 18, 1898	2 00 a day	"	"		
Wm. Thomson.....	May 3, 1843	"	Mountain.....	Oct. 10, 1879	1 25	"	"		
G. H. Brabazon.....	.....	"	Calumet.....	April 1, 1894	360 00 a year	"	" 6 months		
E. Davis.....	.....	"	Coulange.....	April 1, 1894	360 00	"	" 6 to 7 months"		
H. R. Downey.....	May 16, 1846	"	Des Joachims.....	July 1, 1889	300 00	"	" 4 months		
J. H. McGuire.....	.....	"	Dunoine.....	May 1, 1897	300 00	"	"		
J. W. Carmichael.....	.....	"	Rocher Capitaune.....	Dec. 24, 1896	480 00	"	Employed 3 months during season of naviga-		
A. H. Johnson.....	Nov. 28, 1839	"	Chenaux.....	..... 1865	2 50 a day	"	tion. Will inspect works when required.		
G. T. Johnson.....	Sept. 10, 1841	"	"	..... 1872	1 75	"	"		
<i>Newcastle District.</i>									
R. B. Rogers.....	Jan. 17, 1857	Superintendent.....	Peterboro'	July 1, 1884	800 00 a year	"	Receives \$800 a year from Department of		
G. H. Giroux.....	.....	Clerk, supt.'s office..	"	July 1, 1880	400 00	"	Railways and Canals.		
R. A. Wagar.....	.....	Slide master.....	Chisholm Rapids.....	June 15, 1898	200 00	"	" \$400		
W. T. Junkin.....	.....	"	Fenelon Falls.....	Nov. 15, 1896	100 00	"	"		
R. T. Hill.....	.....	"	Buckhorn.....	July 1, 1891	100 00	"	\$250 a year as lock master. " R. & C.		
						Receives \$150 a year from Department of		Railways and Canals.	



STATEMENT showing Names, &c., of persons employed on the various Slides and Booms—*Concluded.*

Name.	Date of Birth.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
<i>Newcastle District—Con.</i>						
Hamilton Johnston.....	.....	Slide master.....	Heeley's Falls.....	July 15, 1893	200 00 a year...	
John Dinwoodie.....	.....	do.....	Lakefield.....	June 20, 1893	150 00 do....	
<i>Richelieu District.</i>						
C. Choquette.....	.....	Boom master.....	Belœil Station....	July 26, 1897	100 00 do....	
<i>Burlington Canal.</i>						
<i>Swing Bridge.</i>						
Wm. Omand.....	.....	Bridge attendant....	Burlington.....	Sept. 19, 1896	600 00 do....	
A. McDonald.....	.....	Bridge assistant.....	do.....	April 1, 1896	1 25 a day....	Employed 9 months.
Ch. Rasberry.....	.....	do.....	do.....	Sept. 19, 1896	1 25 do....	do
Jos. Fustice.....	.....	do.....	do.....	do 19, 1896	1 25 do....	do
<i>Yamaska District.</i>						
H. Lambert.....	.....	Lock keeper.....	Yamaska.....	July 1, 1897	40 00 a month...	
O. Mineau.....	.....	do.....	do.....	Sept. 1, 1885	40 00 do....	
<i>Rivière du Lièvre.</i>						
Hugh Gorman.....	.....	Lock master.....	Rivière du Lièvre...	April 15, 1897	40 00 do....	
James Brazeau.....	.....	Labourer.....	do.....	do 15, 1897	35 00 do....	

R. STECKEL.

Department of Public Works.

NAMES OF PERSONS EMPLOYED ON THE VARIOUS GRAVING DOCKS

ON THE 30th JUNE, 1898

WITH

DATES OF APPOINTMENT, SALARIES, ETC.



GRAVING DOCK EMPLOYEES.

STATEMENT showing the Names, Dates of Appointment, Salaries, &c., of persons employed on the various Graving Docks, 30th June, 1898.

Name.	Date of Birth.	Position.	Where employed.	Date of Appointment.	Salary.	Remarks.
<i>Esquimalt Graving Dock, British Columbia.</i>						
John Devereux .....	.....	Dockmaster .....	Esquimalt .....	Sept. 17, 1887 ..	\$166 66 a month ..	
A. C. Muir .....	.....	Engineer .....	do .....	April 1, 1887 ..	100 00 do ..	
J. W. Muir .....	.....	Asst. engineer .....	do .....	Jan. 11, 1892 ..	80 00 do ..	
A. D. Greaves .....	.....	Carpenter .....	do .....	Dec. 1, 1887 ..	80 00 do ..	
F. M. Jones .....	.....	Stoker .....	do .....	July 1, 1890 ..	60 00 do ..	
T. Dooly .....	.....	do .....	do .....	do 1, 1897 ..	60 00 do ..	
John Stock .....	.....	Watchman .....	do .....	do 1, 1894 ..	50 00 do ..	
<i>Levis Graving Dock.</i>						
Ulric Valiquette .....	30th June, 1856.	Dockmaster .....	Lévis .....	April 13, 1891 ..	1,800 00 a year .....	Annual allowance of \$200 for house rent. First appointment, 9th May, 1873.
Wm. Macdougall .....	.....	Mechanical engineer .....	do .....	June 1, 1888 ..	75 00 a month ..	
T. Guilbault .....	.....	Asst. mechanical engineer .....	do .....	Sept. 1, 1897 ..	45 00 do ..	
Narcisse Lemelin .....	.....	Fireman .....	do .....	June 1, 1888 ..	32 00 do ..	
.....	.....	Caretaker and watchman .....	do .....	.....	.....	
<i>Kingston Graving Dock.</i>						
F. S. Rees .....	.....	Dockman .....	Kingston .....	April 1, 1897 ..	1,000 00 a year ..	
Robert McLeod .....	.....	1st engineer .....	do .....	July 1, 1892 ..	75 00 a month ..	
Wm. Geaghean .....	.....	Fireman .....	do .....	do 1, 1892 ..	45 00 do ..	
C. Staley .....	.....	Watchman .....	do .....	do 1, 1892 ..	45 00 do ..	

R. STECKEL,

Department of Public Works.

LIST OF ENGINEERS, ENGINEMEN, FIREMEN AND CARETAKERS

EMPLOYED

IN THE PUBLIC BUILDINGS THROUGHOUT THE DOMINION  
ON THE 30<sup>TH</sup> JUNE, 1898

GIVING

DATES OF APPOINTMENT, SALARIES, ETC.



ENGINEERS AND CARETAKERS, PUBLIC BUILDINGS.

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on 30th June, 1898.

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time employed each year.	Yearly Salary.
						\$	cts.	\$
								cts.
Amherst.	Post office.	James Morrison.	May 2, 1824	Caretaker.	Nov.	33 33	12 months,	400 00
Antigonish.	Public building.	Angus McDonald.	March —, 1820	do	Feb.	33 33	12 do	400 00
Annapolis.	Post office and C. house.	John McKay.	Oct. 26, 1847	do	April	33 33	12 do	400 00
Baddeck.	Public building.	Alex. S. McDonald.	Dec. 11, 1855	do	Dec.	16 67	12 do	200 00
Dartmouth.	do	J. C. Henley.	do 11, 1846	do	May	20 83	12 do	250 00
Halifax.	Dominion building	Richard Power.	Aug. 15, 1834	Engineer.	Oct.	62 50	12 do	750 00
do	do	John Powell.	do 21, 1836	Fireman	do 1, 1871	50 00	8 do	400 00
do	do	J. F. Sullivan.	April 16, 1866	Caretaker.	July 1, 1892	33 33	12 do	400 00
do	do	W. H. Gray.	Nov. 26, 1848	Watchman	Sept. 10, 1891	39 00	12 do	468 00
do	Examining warehouse.	M. O'Neil.	Dec. 30, 1850	Caretaker.	Oct.	33 33	12 do	400 00
do	Immigrant building.	John Oxley.	April 17, 1856	Fireman.	Feb. 2, 1897	50 00	12 do	600 00
Lunenburg.	Public building.	J. E. Hebb.	Nov. 3, 1833	Caretaker.	June 7, 1895	25 00	12 do	300 00
New Glasgow.	Post office.	Daniel McDonald.	Dec. 17, 1832	do	Oct.	25 00	12 do	300 00
North Sydney.	Public building.	Alex. Green.	July 10, 1825	do	Nov.	29 16	12 do	350 00
Pictou.	Post office and C. house.	Jas. Arbuckle.	Feb. 18, 1836	do	Dec.	25 00	12 do	300 00
Sydney, South.	do	L. Keefe.	May 5, 1846	do	Nov.	29 16	12 do	350 00
Truro.	do	Alex. Smith.	do 17, 1837	do	April	25 00	12 do	300 00
Windsor.	do	Aug. F. Parsons.	March 3, 1846	do	Sept. 22, 1892	33 33	12 do	400 00
Yarmouth.	Public building.	Robert Spears.	Sept. 15, 1824	do	Dec. 23, 1886	33 33	12 do	400 00
Charlottetown.	Dominion building	Wm. J. Fraser.	Jan. 1, 1836	do & fireman	April 3, 1894	33 33	12 do	400 00
do	do	Geo. Walker.	Aug. 28, 1826	Messenger.	Jan. 19, 1875	37 03	12 do	444 36
do	do	M. A. Allan.	Jan. 8, 1855	do	do 24, 1898	37 50	12 do	450 00
do	do	Angus McKenzie.	March 12, 1856	Watchman	Nov. 1, 1896	33 33	12 do	400 00
Montague.	Public building.	W. Gillis.	Oct. 1831	Caretaker.	May 9, 1898	13 33	12 do	160 00
Summerside.	Dominion building.	A. MacSween.	Sept. 25, 1835	do	Sept. 1, 1897	33 33	12 do	400 00
Bathurst.	Post office.	J. A. Melancon.	Jan. 20, 1825	do	April 13, 1887	33 33	12 do	400 00
Chatham.	do	C. Johnston.	May 18, 1856	do	March 27, 1895	25 00	12 do	300 00
Carleton, St. John.	do	James R. Reid.	Aug. 15, 1823	do	Oct. 1, 1889	8 33	12 do	100 00
Dalhousie.	do	Wm. Gould.	Jan. 1, 1853	do	Nov. 26, 1890	33 33	12 do	400 00
Fredericton.	do	James Perkins.	Oct. 5, 1847	do	May 31, 1881	33 33	12 do	400 00
Moncton.	do	E. B. Hicks.	Jan. 11, 1832	do	Jan. 11, 1886	33 33	12 do	400 00
Newcastle.	do	Patrick Keating.	March 13, 1840	do	Oct. 23, 1886	33 33	12 do	400 00

Department of Public Works.

St. Stephen.	"	do	Samuel Topping.	April	2, 1839	do	do	25, 1887	33 33	12	do	400 00
Sussex.	"	do	Shepherd Dryden.	May	18, 1839	do	do	15, 1897	16 66	12	do	200 00
St. John.	"	Custom-house	Neil J. Morrison.	July	25, 1858	Engin'r & caretaker	April	27, 1894	60 00	12	do	720 00
do	"	do	Christopher White	Nov.	20, 1844	Fireman	Nov.	9, 1885	50 00	12	do	600 00
do	"	do	James A. Paul.	Aug.	1, 1837	Caretaker.	Oct.	13, 1891	41 67	12	do	500 00
do	"	Post office	James Wolfe.	March	10, 1850	Engineer	Dec.	1, 1893	55 00	12	do	660 00
Woodstock	"	do	Edward Haney	Feb.	22, 1849	Host attendant.	Nov.	27, 1882	50 00	12	do	600 00
Aylmer.	"	do	Charles Trafton.	Jan.	20, 1839	Caretaker.	May	1, 1897	33 33	12	do	400 00
P.Q.	"	do	Miss M. G. Woods	Nov.	16, 1839	do	April	29, 1895	5 00	12	do	60 00
Coaticook.	"	Public building	Israel Baldwin	Nov.	do	do	June	27, 1889	33 33	12	do	400 00
Fraserville	"	Post office.	Z. Raymond	do	1831	do	Nov.	2, 1897	20 83	12	do	250 00
Hull	"	do	J. H. Kerr.	April	13, 1847	do	Feb.	14, 1893	12 50	12	do	150 00
Joliette	"	do	A. Rattel.	Dec.	20, 1845	do	Sept.	1, 1897	29 16	12	do	350 00
Lachine	"	do	F. Caisse.	Feb.	21, 1831	do	do	22, 1893	8 33	12	do	100 00
Laprairie.	"	do	A. Thomas.	Aug.	8, 1848	do	Nov.	13, 1894	4 16	12	do	50 00
Montreal.	"	Dominion buildings	Thomas Ryan.	June	18, 1836	Foreman engineer.	March	4, 1882	100 00	12	do	1,200 00
do	"	Examining warehouse.	M. Boyer.	Feb.	18, 1848	Fireman	do	4, 1882	50 00	12	do	600 00
do	"	do	N. Loiselle.	Dec.	12, 1866	do	Dec.	4, 1898	45 00	8	do	360 00
do	"	Post office	F. Green.	Oct.	4, 1837	Engineer	Jan.	1, 1885	60 00	12	do	720 00
do	"	do	L. D. Thibault.	Jan.	28, 1861	Electrician.	June	1, 1885	60 00	12	do	720 00
do	"	do	G. S. Gingras.	Dec.	13, 1867	do &c.	Jan.	7, 1895	60 00	12	do	720 00
do	"	do	Jos. Dutrisac.	Feb.	2, 1863	Elevator man	Dec.	15, 1893	50 00	12	do	600 00
do	"	do	Art. Forget.	July	25, 1867	do	do	15, 1893	50 00	12	do	600 00
do	"	do	S. N. Nickle.	Dec.	25, 1871	do	March	1, 1894	50 00	12	do	600 00
do	"	do	C. Vadeboncoeur	May	17, 1842	Caretaker w. c.	Feb.	6, 1894	25 p. d.	12	do	456 25
Inland revenue.	"	do	Louis St. Jean.	Sept.	17, 1840	Fireman	Dec.	1, 1892	50 00	12	do	600 00
Custom-house	"	do	J. H. Marchand.	do	6, 1849	do	do	2, 1882	50 00	12	do	600 00
do	"	do	C. Daudelin	June	18, 1843	do	July	16, 1892	29 16	12	do	350 00
Custom-h. and ex.-wareh.	"	do	B. Lajeunesse.	Nov.	20, 1861	do	Nov.	23, 1896	45 00	9	do	405 00
Drill hall and armouries.	"	do	Wm. McDonald.	Sept.	17, 1832	Engineer	Feb.	21, 1888	75 00	12	do	540 00
Examining warehouse.	"	do	D. P. Kennedy.	Feb.	9, 1865	Engineer	April	1, 1897	45 00	12	do	900 00
do	"	do	T. P. McLaughlin.	Aug.	25, 1871	Fireman	Aug.	26, 1892	45 00	12	do	540 00
Culler's office.	"	do	James O'Neil.	do	15, 1861	do	do	1, 1894	45 00	12	do	540 00
Custom-house.	"	do	John R. Mountain	Nov.	1, 1848	do	Nov.	10, 1888	45 00	12	do	540 00
Post office.	"	do	J. Roy.	Feb.	25, 1836	Caretaker.	Sept.	1, 1897	12 50	12	do	150 00
do	"	do	H. G. Lepage.	Dec.	20, 1853	do	Nov.	1, 1897	33 33	12	do	400 00
do	"	do	H. Demarais.	July	14, 1869	do	May	1, 1898	12 50	12	do	150 00
do	"	do	O. Deseve.	Aug.	8, 1848	do	April	2, 1898	33 33	12	do	400 00
do	"	do	C. Robitaille.	Jan.	22, 1848	do	Sept.	1, 1897	33 33	12	do	400 00
do	"	do	A. C. A. Bissonnette.	Nov.	do	do	March	4, 1895	33 33	12 months.	do	400 00
Public building.	"	do	F. C. X. Tétrault	Nov.	8, 1846	Fireman	Aug.	5, 1893	29 16	12	do	350 00
Post office.	"	do	L. Poirant.	Jan.	21, 1849	Caretaker.	April	14, 1897	12 50	12	do	150 00
do	"	do	Wm. Comper.	May	20, 1826	Watchman	Dec.	28, 1881	4 16	12	do	50 00
Public building.	"	do	A. Beaudry.	June	22, 1849	Caretaker.	Nov.	3, 1896	25 00	12	do	300 00
Custom-house.	"	do	Ph. Gravel.	do	3, 1828	do	Feb.	1, 1891	33 33	12	do	400 00
Post office.	"	do	A. Gauthier	July	2, 1850	do	do	1, 1898	33 33	12	do	400 00
do	"	do	R. Elliott.	Aug.	22, 1835	do	May	7, 1897	33 33	12	do	400 00
do	"	do	Wm. Moulton	March	23, 1839	do	Jan.	29, 1891	33 33	12	do	400 00
do	"	do	W. H. Moore.	Jan.	1, 1846	do	do	8, 1896	33 33	12	do	400 00
do	"	do	John Squire.	April	24, 1842	do	Oct.	27, 1880	50 00	12	do	600 00



STATEMENT showing the Names, &c., of the Engineers, Firemen, Caretakers, Hoist Attendants and Watchmen employed at the Dominion Public Buildings, &c.—Continued

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time employed each Year.	Yearly Salary.
						\$ cts.		\$ cts.
Barrie.....	Post office.....	R. D. Hill.....	Nov. 1, 1857	Caretaker.....	June 26, 1896	33 33	12 months...	400 00
Belleville.....	do.....	J. P. Reeves.....	do 27, 1820	do.....	Oct. 17, 1883	50 00	12 do.....	600 00
Berlin.....	do.....	James McBride.....	Oct. 5, 1840	do.....	Jan. 29, 1891	33 33	12 do.....	400 00
Brampton.....	do.....	Jas. F. Halfpenny.....	April 17, 1858	do.....	May 13, 1892	33 33	12 do.....	400 00
Carleton Place.....	do.....	W. W. Mitchell.....	May 25, 1848	do &c.....	Jan. 7, 1885	25 00	12 do.....	300 00
Chatham..	do.....	R. Conroy.....	Nov. 6, 1848	do.....	April 1, 1897	29 16	12 do.....	350 00
Cornwall.....	do.....	G. A. Gibson.....	May 29, 1861	do.....	Sept. 3, 1891	33 33	12 do.....	400 00
Cayuga.....	do.....	H. J. Payne.....	Jan. 31, 1854	do.....	April 24, 1890	4 16	12 do.....	50 00
Cobourg....	do.....	Wm. Kilgour.....	Mar. 3, 1857	do.....	Sept. 23, 1886	33 33	12 do.....	400 00
Galt.....	do.....	Robert Higham.....	May 20, 1834	do.....	Oct. 29, 1889	33 33	12 do.....	400 00
Guelph.....	do.....	T. P. Richardson.....	Feb. 25, 1834	do.....	May 1, 1889	33 33	12 do.....	400 00
Gananoque.....	do &c.....	G. Bissett.....	April 14, 1851	do.....	Sept. 1, 1897	29 16	12 months...	350 00
Goderich.....	do.....	Alfred Bernard.....	Dec. 27, 1847	do.....	Dec. 10, 1894	50 00	12 do.....	600 00
Hamilton.....	Dominion building	J. Wigglesworth.....	Aug. 7, 1863	Fireman.....	Oct. 1, 1896	40 00	8 do.....	320 00
do.....	do.....	Thos. Nicholson.....	Dec. 17, 1857	Engineer.....	Mar. 2, 1887	50 00	12 do.....	600 00
do.....	Drill hall.....	H. Morris.....	Sept. 25, 1849	Fireman.....	Dec. 6, 1897	45 00	8 do.....	360 00
Kingston.....	Military college	Wm. Johnston.....	do 12, 1842	Engineer.....	May 31, 1881	65 00	12 do.....	780 00
do.....	do.....	M. Madden.....	Dec. 22, 1838	Fireman.....	Oct. 12, 1878	55 00	12 do.....	660 00
London.....	Custom-house.....	M. Mulkern.....	Sept. 4, 1839	Engineer.....	Sept. 18, 1888	50 00	12 do.....	600 00
do.....	Post office.....	Wm. Greer.....	Oct. 12, 1836	Caretaker.....	Mar. 16, 1884	33 33	12 do.....	400 00
do.....	do.....	John Price.....	do 6, 1836	Engineer.....	Jan. 14, 1884	50 00	12 do.....	600 00
Lindsay.....	do and C. house.	Wm. Galbraith.....	Jan. 8, 1844	Caretaker.....	Nov. 16, 1893	33 33	12 do.....	400 00
Napanee.....	do.....	R. Webster.....	July 7, 1846	do.....	April 1, 1898	33 33	12 do.....	400 00
Niagara Falls.....	do.....	Wm. J. Sheppard.....	Jan. 4, 1854	do.....	Jan. 15, 1897	33 33	12 do.....	400 00
Orangeville.....	do.....	John Wilkins.....	May 29, 1830	do.....	Sept. 15, 1886	33 33	12 do.....	400 00
Orillia.....	do.....	T. Goffatt.....	Mar. 14, 1844	do.....	May 1, 1897	10 00	12 do.....	120 00
Peterborough.....	do.....	John Irwin.....	May 17, 1842	do.....	June 8, 1887	41 66	12 do.....	500 00
Petrollea.....	do.....	Chas. McRitchie.....	Mar. 29, 1853	do.....	Feb. 1, 1894	33 33	12 do.....	400 00
Port Colborne.....	do.....	Wm. Armstrong.....	Sept. 9, 1846	do.....	June 11, 1888	20 00	12 do.....	240 00
Port Hope.....	do.....	Levi Reynolds.....	Feb. 15, 1839	do.....	Nov. 17, 1885	33 33	12 do.....	400 00
Port Arthur.....	Public building	John Whitehead.....	April 15, 1839	do.....	Sept. 11, 1893	25 00	12 do.....	300 00
Pembroke.....	do.....	Samuel Hamilton.....	June 4, 1834	do.....	Oct. 29, 1890	33 33	12 do.....	400 00
Prescott.....	Post office.....	R. C. Henderson.....	April 6, 1822	do.....	Dec 23, 1890	33 33	12 do.....	400 00

Department of Public Works.

Stratford.....	"	J. H. Roberts	May	1, 1847	Engineer	Feb.	7, 1884	50 00	12	do	600 00
St. Catharines.....	"	Louis Reno.	Oct.	24, 1842	Caretaker	do	27, 1887	33 33	12	do	400 00
St. Thomas.....	"	James Russell.	Sept.	15, 1832	do	do	4, 1885	33 33	12	do	400 00
Strathroy.....	"	Wm. J. Johnston.	May	12, 1840	do	do	25, 1890	33 33	12	do	400 00
Smith's Falls.....	"	R. W. Lewis.	Aug.	19, 1863	do	do	8, 1896	25 00	12	do	300 00
Toronto	"	W. J. Smith.	Nov.	18, 1840	Foreman engineer.	Dec.	9, 1897	100 00	12	do	1,200 00
do	"	C. H. Bailie.	Sept.	22, 1852	Fireman	Jan.	13, 1891	50 00	12	do	600 00
do	"	Fred. Faragher	Oct.	16, 1865	do	Nov.	1, 1889	50 00	12	do	600 00
do	"	James Cosgrove.	Feb.	10, 1844	Engineer	Dec.	28, 1874	65 00	12	do	780 00
do	"	Ed. Appleton.	Sept.	26, 1864	Fireman	Sept.	23, 1886	55 00	12	do	660 00
do	"	Alexander Dey.	do	27, 1863	Hoist attendant.	Dec.	1, 1887	50 00	12	do	600 00
do	"	Wm. Chenery	Dec.	19, 1851	do	do	1, 1887	50 00	12	do	600 00
do	"	W. J. Slean.	July	5, 1855	do	do	2, 1888	50 00	12	do	600 00
do	"	Jas. Richardson	Feb.	23, 1831	Watchman	Sept.	3, 1888	46 50	12	do	558 00
do	"	J. Somers	April	8, 1835	Engineer.	Oct.	9, 1897	45 00	8	do	360 00
do	"	J. Graham	Mar.	16, 1840	Fireman.	do	do	45 00	8	do	360 00
do	"	George Letray.	May	20, 1858	do	Nov.	1, 1896	45 00	8	do	360 00
do	"	Richard Eyre.	Oct.	11, 1849	do	Mar.	25, 1895	45 00	12	do	540 00
do	"	Wm. Townley.	Feb.	25, 1856	do	Dec.	31, 1895	45 00	8	do	360 00
do	"	F. C. McWhirter.	Nov.	16, 1863	Watchman	Sept.	11, 1897	46 50	12	do	558 00
Trenton.....	"	David Allan.	May	13, 1844	Caretaker	Aug.	31, 1889	33 33	12	do	400 00
Windsor.....	"	I. Belleperdie.	Oct.	26, 1848	Engineer.	Dec.	24, 1897	50 00	12	do	600 00
do	"	W. Curtis.	Mar.	6, 1844	Caretaker	Nov.	9, 1880	33 33	12	do	400 00
do	"	T. Gibson.	Aug.	14, 1838	do	do	1, 1897	50 00	8	do	400 00
Walkerton.....	"	T. Giles	Mar.	30, 1843	do	Aug.	1, 1897	40 00	12	do	480 00
Brandon.....	Man.	J. R. Alexander.	Aug.	19, 1852	Engineer.	June	1, 1888	70 00	12	do	840 00
Winnipeg	"	Patrick Dillon	Mar.	17, 1849	Fireman.	Jan.	1, 1889	45 00	12	do	540 00
do	"	Joseph Coutu.	May	10, 1843	Hoist attendant.	Mar.	16, 1887	45 00	12	do	540 00
do	"	Joseph Gagnier	April	11, 1853	Watchman	June	7, 1892	45 00	12	do	540 00
Calgary.....	N. W. T.	G. L. Fraser.	Oct.	20, 1851	Caretaker	Aug.	1, 1894	40 00	12	do	480 00
do	"	E. N. Brown.	Mar.	8, 1845	do	Jan.	24, 1891	45 00	12	do	540 00
Edmonton.....	"	R. Wylie.	July	7, 1859	do	June	21, 1894	33 33	12	do	400 00
Lethbridge.....	"	Robert Sage	Oct.	15, 1849	do	Aug.	26, 1894	35 00	12	do	420 00
Moosomin.....	"	J. C. Jopp.	Jan.	6, 1848	do	April	29, 1897	45 00	12	do	540 00
Moose jaw.....	"	W. J. White	July	21, 1865	do	Dec.	31, 1895	33 33	12	do	400 00
Macleod.....	"	John Ryan.	June	24, 1827	do	Nov.	1, 1893	14 58	12	do	175 00
Prince Albert.....	"	Geo. D. Northgraves	May	20, 1838	do	June	14, 1887	33 33	12	do	400 00
do	"	J. Savard.	Aug.	14, 1859	Fireman.	Nov.	11, 1897	40 00	8	do	320 00
do	"	George Cassie.	Jan.	13, 1833	Caretaker	Aug.	25, 1893	33 33	12	do	400 00
Regina.....	"	P. McAr.	Mar.	24, 1840	do	do	1, 1889	45 00	12	do	540 00
do	"	K. Murchison	do	1832	Fireman.	Oct.	9, 1897	40 00	12	do	480 00
Wolseley.....	"	Charles Taylor	June	11, 1844	Caretaker	do	2, 1895	45 00	12	do	540 00
Nanaimo.....	B. C.	J. Thompson	Sept.	2, 1836	do	May	1, 1897	50 00	12	do	600 00
New Westminster.....	"	Jno. Mc Murphy	Aug	2, 1812	do	Oct.	1, 1884	50 00	12	do	600 00
Victoria.....	"	W. H. Bailey.	May	7, 1865	do	July	1, 1894	50 00	12	do	600 00
do	"	Wm. McKay	Dec.	31, 1857	do	Feb.	4, 1898	50 00	12	do	600 00
Vancouver.....	"	Atwell King.	April	6, 1843	do	Aug.	25, 1893	33 33	12	do	400 00

R. STECKEL.





Department of Public Works.

# NATIONAL ART GALLERY

## CURATOR'S REPORT

FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1898.





# Department of Public Works.

## NATIONAL GALLERY.

CHIEF ARCHITECT'S OFFICE,  
OTTAWA, 31st December, 1898.

SIR,—I have the honour to report that the following addition has been made to the Gallery, during the fiscal year ended 30th June, 1898 :—

Oil painting by Charles Eugene Moss, Esq., R.C.A.

This painting has been presented to the Gallery by the Royal Canadian Academy, in accordance with the Act of Incorporation requiring diploma pictures to be deposited in the National Gallery.

Thirteen thousand two hundred and thirty-six visitors have registered their names, being a decrease of 6064 during the year.

I have the honour to be, Sir,  
Your obedient servant,

L. FENNINGS TAYLOR,  
*Curator.*

E. F. E. Roy, Esq.,  
Secretary, Department of Public Works.





Department of Public Works

TABULAR STATEMENT

SHOWING THE DATES OF

THE CLOSING AND OPENING OF NAVIGATION

AT THE PRINCIPAL PORTS OF CANADA

ON THE SEABOARD, THE RIVER AND GULF ST. LAWRENCE,  
AND ON THE GREAT LAKES

1897-98



STATEMENT showing the Date of the Closing and Opening of Navigation at the undermentioned Ports of Canada, in 1897 and 1898.

Port.	Province.	Situation.	Date of Closing 1897-98.	Date of Opening 1898.	Remarks.
Arichat, C.B.	Nova Scotia.	Isle Madame.	Feb. 1, 1898.	Mar. 17.	Although closed to navigation between here and Cross Point on 1st December, there was open water below railroad wharf. SS. "Stanley" arrived from Picton 3rd March, 1898, and continued running till S. N. Co.'s steamers commenced running on 5th April.
Bathurst.	New Brunswick.	Baie des Chaleurs.	Nov. 23, 1897.	Apr. 29.	
Belleville.	Ontario.	Lake Ontario.	do 28, 1897.	Mar. 28.	
Campbellton.	New Brunswick.	Baie des Chaleurs.	Dec. 1, 1897.	Apr. 24-25.	
Charlottetown.	P. E. Island.	Gulf St. Lawrence.	do 30, 1897.	do 4.	
Collingwood.	Ontario.	Georgian Bay, Lake Huron.	do 3, 1897.	do 11.	Jan. 28, 1899, harbour opened to within one-quarter mile of railroad wharf, and outwards from range lights at Westaway's; thickness of ice from open water to wharf about six inches. SS. "Stanley" arrived from Picton at 11 a. m. to-day.
Gaspe.	Quebec.	Gulf St. Lawrence.	Jan. 2, 1898.	do 28.	
Georgetown.	P. E. Island.	do	do 16, 1898.	do 10.	
Goderich.	Ontario.	Lake Huron.	Dec. 17, 1897.	Mar. 24.	This port never closes.
Halifax.	Nova Scotia.	Atlantic Ocean.	Jan. 10, 1898.	Apr. 17.	Very open fall of 1897: late spring in 1898.
Kingcardine.	Ontario.	Lake Huron.	do 11, 1898.	Mar. 15.	SS. "Bruce" carried passengers and mails all winter to Archibald & Co.'s wharf.
Kingston.	do	Lake Ontario.	Dec. 19, 1897.	Apr. 21.	
Montreal.	Quebec.	River St. Lawrence.	do 28, 1897.	do 15.	
North Rustico.	P. E. Island.	Gulf St. Lawrence.	Jan. 28, 1898.	Mar. 30.	
North Sydney, C.B.	Nova Scotia.	Atlantic Ocean.	Dec. 24, 1897.	do 1.	
Owen Sound.	Ontario.	Georgian Bay, Lake Huron.	do 28, 1897.	Apr. 1.	Harbour not entirely closed; only floating ice.
Percé.	Quebec.	Gulf St. Lawrence.	do 25, 1897.	Mar. 28.	SS. "Princess" arrived from Charlottetown April 5, 1898.
Picton.	Nova Scotia.	do	do 7, 1897.	Apr. 26.	Coal ferries ran all winter to Conneaut, Ohio.
Port Arthur.	Ontario.	Lake Superior.	do 20, 1897.	Mar. 26.	
Port Hope.	do	Lake Erie.	do 7, 1897.	do 15.	
Port Stanley.	do	Lake Erie.	do 20, 1897.	do 23.	Harbour and lake both free of ice at times in winter, so that steamers might have run had they wished. This is the case nearly every winter. On 26th Jan., 1899, ferry steamer crossing lake pretty regularly. There is heavy ice, however, in lake, and last trip she was delayed twenty-four hours making ten miles.
Quebec.	Quebec.	River St. Lawrence.	Jan. 24, 1898.	Apr. 11.	First schooner arrived 13th April, 1898; first ocean steamer arrived 28th April, 1898; last schooner cleared 20th Nov., 1897; last ocean steamer cleared 27th Nov., 1897.
Rimouski.	do	do	Dec. 15, 1897.	do 15.	No ice forms—navigation always open.
St. Ann's.	Nova Scotia.	Atlantic Ocean.	Jan. 15, 1898.	do 25.	
St. John.	New Brunswick.	Bay of Fundy.	Nov. 30, 1897.	Apr. 20.	
St. John's.	Quebec.	River Richelieu.			

Department of Public Works.

St. Peters, C.B.....	Nova Scotia.....	Atlantic Ocean.....	Jan. 7, 1897.	Mar. 10..	Between these dates harbour and bay ice broke up twice--open to navigation.
Sarnia.....	Ontario.....	Lake Huron.....	Dec. 24, 1897.	do 20..	Ice between Sault Ste. Marie, Michigan, and this port formed 28th Dec., 1897, and ferry ceased running; ice broke up between the two towns 2nd April, 1898, and ferry commenced running that date.
Sault Ste. Marie.....	do .....	Lake Superior.....	do 13, 1897.	Apr. 13..	
Shediac.....	New Brunswick.	Gulf St. Lawrence.....	do 22, 1897.	do 12..	Open all the year round except for floating ice. The dates are of the last clearance in the fall and the first arrival in the spring.
Sorel.....	Quebec.....	River Richelieu. ....	Nov. 30, 1897.	do 2..	
Summerside.....	P. E. Island.....	Gulf St. Lawrence .....	Dec. 22, 1897.	do 17..	
Sydney, C.B.....	Nova Scotia.....	Atlantic Ocean.....	Jan. 10, 1898.	do 11..	
Tadousac.....	Quebec.....	River St. Lawrence.....	Nov. 19, 1897.	do 1..	Bay frozen over for 82 days.
Three Rivers.....	do .....	do .....	do 26, 1897.	do 6..	
Toronto.....	Ontario.....	Lake Ontario.....	Dec. 24, 1897.	Mar. 16..	Last passage up 17th Dec., 1898; last passage down 18th Dec., 1898.
Warton.....	do .....	Georgian Bay.....	Jan. 11, 1898.	do 23..	
Windsor.....	.....	Detroit River.....	Dec. 20, 1897.	do 1..	
Winnipeg.....	Manitoba .....	Lake Winnipeg.....	Nov. 17, 1898.	Apr. 20..	





Department of Public Works.

# OFFICIAL CORRESPONDENCE

DEPARTMENT OF PUBLIC WORKS

FROM 1<sup>ST</sup> JULY, 1867, TO 30<sup>TH</sup> JUNE, 1898



Department of Public Works.

OFFICIAL CORRESPONDENCE.

LETTERS Received and Sent from 1st July, 1867, to 30th June, 1898.

Years.				Received.	Sent.
1867	From 1st July to 31st December. . . . .			2,075	1,511
1868	do	1st January to 31st December. . . . .		3,498	2,317
1869	do	do do . . . . .		3,448	2,171
1870	do	do do . . . . .		4,961	3,185
1871	do	do do . . . . .		6,268	3,983
1872	do	do do . . . . .		8,333	4,428
1873	do	do do . . . . .		10,072	5,707
1874	do	do do . . . . .		9,800	5,043
1875	do	do do . . . . .		9,006	5,006
1876	do	do do . . . . .		7,971	4,773
1877	do	do do . . . . .		7,517	4,425
1878	do	do do . . . . .		6,886	4,021
1879	do	do to 6th October. . . . .		7,186	4,547
1879	do	7th October to 31st December. . . . .		2,033	810
1880	do	1st January do . . . . .		8,451	4,410
1881	do	do do . . . . .		9,599	5,529
1882	do	do do . . . . .		10,505	5,699
1883	do	do do . . . . .		11,633	6,227
1884	do	do do . . . . .		13,114	6,903
1885	do	do do . . . . .		8,977	5,321
1886	do	do do . . . . .		9,644	5,352
1887	do	do to 30th June . . . . .		4,866	2,735
1887	do	1st July do 1888 . . . . .		10,493	6,343
1888	do	do do 1889. . . . .		10,522	7,042
1889	do	do do 1890. . . . .		10,098	7,448
1890	do	do do 1891. . . . .		10,576	7,286
1891	do	do do 1892 . . . . .		11,637	6,700
1892	do	do do 1893 . . . . .		11,720	6,220
1893	do	do do 1894. . . . .		9,517	6,028
1894	do	do do 1895. . . . .		10,190	5,148
1895	do	do do 1896. . . . .		10,223	5,573
1896	do	do do 1897. . . . .		11,404	5,033
1897	do	do do 1898. . . . .		9,640	5,250

NUMBER of Cheques sent by Accountant to Secretary's Branch and mailed through the latter, from 1882 to 1898.

Year.	—				No.
1882. . . . .	From 22nd September to 30th June, 1883. . . . .				1,566
1883. . . . .	do	1st July	do	1884. . . . .	3,366
1884. . . . .	do	do	do	1885. . . . .	3,298
1885. . . . .	do	do	do	1886. . . . .	3,466
1886. . . . .	do	do	do	1887. . . . .	4,198
1887. . . . .	do	do	do	1888. . . . .	4,692
1888. . . . .	do	do	do	1889. . . . .	4,960
1889. . . . .	do	do	do	1890. . . . .	4,819
1890. . . . .	do	do	do	1891. . . . .	5,376
1891. . . . .	do	do	do	1892. . . . .	5,400
1892. . . . .	do	do	do	1893. . . . .	7,174
1893. . . . .	do	do	do	1894. . . . .	7,792
1894. . . . .	do	do	do	1895. . . . .	8,745
1895. . . . .	do	do	do	1896. . . . .	9,849
1896-7 . . .	Records incomplete ; partially destroyed by fire, 11th February, 1897. . . . .				
1897-98. . . .	From 1st July to 30th June, 1898 . . . . .				10,858



CHEQUES issued by Finance Department and mailed from Secretary's Branch.

Year.		No.
1885.....	From 1st April to 30th June 1885.....	245
1885.....	do 1st July do 1886.....	954
1886.....	do do do 1887.....	1,158
1887.....	do do do 1888.....	918
1888.....	do do do 1889.....	887
1889.....	do do do 1890.....	908
1890.....	do do do 1891.....	790
1891.....	do do do 1892.....	820
1892.....	do do do 1893.....	822
1893.....	do do do 1894.....	868
1894.....	do do do 1895.....	594
1895.....	do do do 1896.....	267
1896-7.....	Records incomplete; partially destroyed by fire, 11th February, 1897.....	
1897-8.....	From 1st July to 30th June, 1898.....	332

LETTERS Received and Sent, Chief Architect's Office, from 1st January, 1880, to 30th June, 1898.

Year.	Received.	Sent.
1880—From 1st January to 30th June .....		1,273
1880 do 1st July do 1881.....		2,943
1881 do do do 1882.....		2,859
1882 do do do 1883.....	3,538	4,600
1883 do do do 1884.....	3,860	6,004
1884 do do do 1885.....	4,500	6,718
1885 do do do 1886.....	6,075	6,450
1886 do do do 1887.....	6,816	6,380
1887 do do do 1888.....	6,947	6,870
1888 do do do 1889.....	6,484	7,667
1889 do do do 1890.....	7,448	6,578
1890 do do do 1891.....		7,751
1891 do do do 1892.....	6,113	4,260
1892 do do do 1893.....	7,428	6,453
1893 do do do 1894.....	6,900	*4,517
1894 do do do 1895.....	7,538	†5,327
1895 do do do 1896.....	7,843	5,783
1896 do do do 1897.....	10,700	8,200
1897 do do do 1898.....	10,867	8,547

\* The exact number of letters received cannot be accurately given, but would bear about the same proportion to the letters sent as last year.  
† The decrease in the number of letters sent, is due to a change made on 1st January, 1894, in the manner of transmitting accounts to the secretary. Previous to that date a letter accompanied each account but now a bundle of accounts goes with each letter.

## Department of Public Works.

LETTERS Sent from Chief Engineer's Office, from January, 1880,  
to 30th June, 1897.

Year.					No.
1880.....	From 10th January to 30th June .....				418
1880.....	do	1st July	do	1881.....	1,795
1881.....	do	do	do	1882.....	2,352
1882.....	do	do	do	1883.....	2,651
1883.....	do	do	do	1884.....	3,611
1884.....	do	do	do	1885.....	3,119
1885.....	do	do	do	1886.....	2,867
1886.....	do	do	do	1887.....	3,281
1887.....	do	do	do	1888.....	3,552
1888.....	do	do	do	1889.....	4,229
1889.....	do	do	do	1890.....	3,374
1890.....	do	do	do	1891.....	3,948
1891.....	do	do	do	1892.....	4,009
1892.....	do	do	do	1893.....	4,232
1893.....	do	do	do	1894.....	3,966
1894.....	do	do	do	1895.....	4,603
1895.....	do	do	do	1896.....	4,239
1896.....	do	do	do	1897.....	4,994
1897.....	do	do	do	1898.....	4,696

NOTE.—The letters, including returns, received in the Chief Engineer's Office may be estimated at the rate of two received to one sent.





Department of Public Works.

CANADA

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SPECIAL APPENDIX "A"

TO

REPORT OF MINISTER OF PUBLIC WORKS

FOR

FISCAL YEAR 1897-98

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REPORT BY THE CHIEF ENGINEER

ON THE

"DENISON HYDROGRAPH

PUT UP ON

QUEEN'S WHARF, WESTERN ENTRANCE, TORONTO HARBOUR

MAY, 1898



Department of Public Works.

REPORT ON THE "DENISON HYDROGRAPH" PUT UP ON QUEEN'S  
WHARF, TORONTO HARBOUR IN MAY, 1898.

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DEPARTMENT OF PUBLIC WORKS OF CANADA.

CHIEF ENGINEER'S OFFICE, OTTAWA, 2nd August, 1898.

E. F. E. ROY, Esq.,

Secretary, Department of Public Works.

SIR,—I have the honour to transmit herewith a communication from Mr. Napier Denison, of the Meteorological Service of Canada, dated 30th July, 1898, relative to the new hydrograph devised by him, which has been put up at the western entrance to Toronto harbour, for the use of this Department.

Mr. Denison's ingenious, self-registering lake gauge, or hydrograph, is calculated to be of much service both for navigation and meteorological purposes.

A similar instrument has just been completed to be installed at the Kingston Graving Dock, and it is very desirable that a few more such automatic gauges be put up at other important points on the Great Lakes as soon as practicable.

I would recommend that Mr. Denison's interesting communication, inclusive of illustrations, be printed in extenso as an appendix to the official report of the Department for the fiscal year ended 30th June, 1898.

I am, sir,

Your obedient servant,

R. STECKEL,  
*for Chief Engineer.*





## Department of Public Works

TORONTO, 30th July, 1898.

The Chief Engineer,  
Public Works Department, Ottawa.

SIR,—I have the honour to present a drawing (III. 1) and description of a new hydrograph recently devised by me, and acting under your direction set up at the western entrance channel of Toronto harbour.

*A* is the recording cylinder 2 feet in length by 24 inches in circumference, which by means of the clock *B* completes one revolution every 24 hours; *C* and *C*<sup>1</sup> are the standards upon which the cylinder revolves. *D* and *D*<sup>1</sup> not only carry the small pulleys *E* and *E*<sup>1</sup>, but form the terminals for the horizontal nickel plated guide rod *F* and another similar and parallel rod immediately behind it. These rods form a track for guiding the carriage *G*, on which the self-recording pen *H* is mounted. The penholder is pivoted so that it may be thrown back from the cylinder when changing the recording sheet. The float *I* is placed in a shaft composed of two concentric parts, viz.: an outer square box of 2 inch planking measuring about 12 by 12 inches inside, perforated with a number of auger holes near the bottom which is closed, and an inner cylindrical galvanized iron tube *K*, 10 inches diameter inside, also closed at bottom, which has only a few small holes near its lower extremity.

This composite shaft was sunk immediately outside the storm signal house where the instrument has been installed; it permits of the inner tube *K* being drawn out and cleaned, should the small apertures become choked. The lower portion of the outer box is attached firmly to the lower timbers of the wharf, as shown at *J*, while the upper portion is left free to prevent any possible future settling of the upper cribwork from disturbing it.

The movement of the float is transmitted to the recording sheet in the following manner:—

A cord of fine twisted brass wire passes from float *I* over pulley *L* to and several times around pulley *M*, and is attached to the outer grooved circumference of this pulley. At the smaller grooved circumference of the same pulley is attached a similar flexible metallic cord which passes over pulley *E* through the centre of the carriage *G*, and then over pulley *E*<sup>1</sup> to the counter weight *N*.

The ratio of the motion of the pen to that of the float is as 1 to 5. The horizontal lines upon the recording sheet represent heights in feet and tenths of a foot, and the heavy, medium and fine vertical lines indicate hours, half-hours and quarter hours respectively. As the circumference of the cylinder measures 24 inches, an inch upon the sheet corresponds to one hour in time. To correctly set the instrument, it is only necessary to move the carriage *G* along the flexible wire, until the recording pen has reached the required number of feet and tenths of a foot above the previously

determined datum, then firmly attach the carriage *G* to the wire by means of the set screw *O*.

To change the recording sheet, the pen *H* is thrown back, the cylinder including friction gear *P* placed upon a table, the old sheet taken off by raising two special spring clips at either end of the cylinder, and a new sheet substituted and held firmly in place by means of these clips. After the cylinder is again in proper position, it is easily set to the correct clock time by turning until the point of the pen agrees with this time as shown upon the sheet. This can be accomplished without injuring the clock, for, when properly adjusted, the socket *P* so fits over the end of the shaft as to permit of the cylinder being easily moved by hand, but binds sufficiently to prevent slipping during the normal movement generated by the clock. A set or clamp screw has, however, been added, so that a perfect connection between clock and cylinder may be readily ensured at all times.

The traces from this hydrograph not only furnish a continuous record of the hydraulic variations of the Great Lakes, which is of primary importance to your Department, but also will prove of great scientific value by demonstrating the existence of numerous rapid secondary fluctuations in the water level on these lakes, or short undulations of various forms similar to those which have been studied upon the Swiss Lakes, where they have been termed "Seiches." The writer has made a careful study of these undulations, as derived from records afforded by a combined lake level and barometric registering instrument termed a hydro-aerograph, which was set up at the mouth of the Humber River last July for the Canadian Meteorological Service,\* from which he has deduced the existence of:—

1. A longitudinal and a transverse "Seiche" of about 4 hours plus 45 minutes and 45 minutes duration, respectively, due to abnormal differences in the atmospheric pressures which obtain at the extremities and on opposite shores of the lake.

2. Shorter undulations after the passage of a wave of considerable amplitude, due to the direct action upon the surface of the water by atmospheric waves, which are known to exist before and during the passage of severe storms, including thunderstorms.

3. A measurable lunar and solar tide.

Although the instrument above described has only been in operation since last May, many interesting types of undulations have been obtained. On illustration II, appended hereto, three varieties of such undulations or oscillations registered during different weather conditions, are shown.

The record of the 19th of May illustrates the very great and rapid oscillations set up by the passage of a thunderstorm. Upon the extreme left a phenomenal rise of 1.06 feet in less than 5 minutes, is registered, which is followed 20 minutes later by a fall of 1.08 feet in 4 minutes. The notched and complex appearance of the latter portion of the trace appears to be due to interferences of the larger undulations

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\* Fully described in a paper read before the Toronto meeting of the British Association, entitled "The Great Lakes as a Sensitive Barometer," by the writer.



## Department of Public Works.

as they travel from one side of the lake to the other. Similar abnormal undulations have frequently been observed upon Lake Erie, where they have been falsely termed "tidal waves."

The intermediate diagram taken from the trace obtained on the 31st of May, represents a moderately disturbed record during a falling barometer, in advance of an approaching area of low barometer from the north-west. Near the beginning and an hour and a half from the end will be seen abnormal movements of the pen, due to the passage of steamers. As soon as an approaching vessel comes within the piers, although several hundred yards distant, the pen rises rapidly until the vessel is opposite the instrument and then falls as suddenly, often showing, as in the former case, a range of  $\cdot 2$  of a foot. This action is usually followed by a transverse oscillation of the water in the channel, lasting from 5 to 10 minutes.

The abnormally quiet trace, taken from the record of the 25th of May, was secured during fine settled weather when the barometer was high throughout the lake region.

Hoping this instrument and a similar one just completed for Kingston may meet with your approval, and that their introduction may lead to the installation of others upon the Upper Lakes,

I have the honour to be, Sir,  
Your obedient servant,

F. NAPIER DENISON,  
*Meteorological Service of Canada.*



Department of Public Works.

CANADA

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SPECIAL APPENDIX "B"

TO

REPORT OF MINISTER OF PUBLIC WORKS

FOR

FISCAL YEAR 1897-98

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MEMORANDUM

ON THE

SELF-REDUCING SANGUET TACHEOMETER

AS ADAPTED TO PRECISION LEVELLING

IN CONNECTION WITH A NEW ROD

BY

R. STECKEL, M. Can. Soc. C.E.

*Engineer in charge, Canadian Geodetic Levelling*





Department of Public Works.

“SANGUET TACHEOMETER”

FOR

PRECISION LEVELLING.

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DEPARTMENT OF PUBLIC WORKS, CANADA,

CHIEF ENGINEER'S OFFICE, OTTAWA, 30th July, 1898.

E. F. E. ROY, Esq.,

Secretary, Public Works Dept., Canada.

SIR,—I have the honour to transmit herewith a Memo. with illustrations, on the self-reducing Sanguet Tacheometer as adapted by me to precision levelling with the aid of a new Geodesic Rod.

As you are aware, the purchase of one of these perfected tacheometers, modified in accordance with the views I communicated to Mr. Louis Coste, Chief Engineer of this Department, under date of April 16th, 1896, was upon his recommendation sanctioned by the Honourable the Minister, in the fall of 1896, and accordingly an order for the instrument was sent by me to Cabasson, of Paris, at the end of December of the same year. Owing to various delays caused principally by the unavoidably long correspondence I had to carry on with the maker and the inventor himself, Mr. Sanguet, relative to the projected modifications and additions to the original model of his invention, and difficulties experienced in making the said alterations, the improved tacheometer with its accessories reached Ottawa only in the ensuing September (1897). Again, the new geodesic rod I devised for use in connection with the modified self-reducing tacheometer, could for various reasons too long to enumerate, not be satisfactorily completed before July, 1898. Hence the reason for not submitting this Memo. to you at an earlier date.

The Sanguet tacheometer supplied by Mr. Cabasson which bears the order number 115, is all that could be desired, both in point of construction and finish, as far as can be judged from a close indoor examination and a few verifications made on Parliament Square. It is what may properly be termed a universal surveying instrument, being admirably contrived for measuring, in all positions, distances automatically reduced to their horizontal projections, and that more accurately and expeditiously than these horizontal distances could be measured under the most favourable circumstances, with either chain, tape or any other measuring device, besides which the tacheometer is equally serviceable for levelling and taking horizontal and vertical directions and compass readings. I have no doubt that when tested in a practical manner in the field, our new tacheometer will prove satisfactory in every way for carrying on expeditiously and economically, not only the precise levelling and surveying operations, this particular instrument is more especially destined to be used for ; but also all ordinary engineering field operations.

The new geodesic rods, of which there are three, were manufactured at Ottawa, inclusive of all the accessories, viz.:—in accordance with the drawings I furnished, and under my direct supervision; for being of home manufacture, the rods are none the less artistic pieces of workmanship. The woodwork was executed at the government workshop under the superintendence of Mr. F. Breton, clerk of works, the metal mountings and fittings by Mr. Geo. Bailey, of Wellington Street, and last but not least, the painting, inclusive of scale divisions, under the direction of Mr. Alfred Côté, who is in charge of the government paintshop; although not machine divided, the scales are remarkably neat and accurate, and the figuring is very distinct and striking.

I must confess that, notwithstanding many elaborate reports made on various occasions, by prominent engineers in different countries, to show the advantages to be gained by the regular and extended use of the ordinary stadia wire tacheometer for engineering field work generally, I was never favourably impressed by the results obtained with such instruments, taking into consideration the troublesome and bulky reductions, etc., which have to be attended to, and failed to see how such tacheometers could ever really be of much service to the engineering profession, except for reconnaissance work, running trial lines and other operations of a similar nature. I now feel satisfied, however, that in a comparatively short time we shall see the improved self-reducing Sanguet tacheometer or some similar apparatus take the place of nearly all other surveying instruments used at present for engineering purposes, and that chain or tape measurements of long horizontal distances will soon be a thing of the past.

With a view of verifying, in this country, all the good points claimed for this tacheometer, and at the same time affording the engineers of the Department an



## Department of Public Works.

opportunity of becoming acquainted with its practical working, I would suggest that it should be first used in making, under my direction, an accurate plan with level contour lines of Parliament Square, Major's Hill and Nepean Point, that is to say: a plan showing the precise boundaries and elevations of the ground of all our properties lying south of the Ottawa River as far back as Queen Street, and west of Sussex Street and the Rideau Canal up to Bank Street.

I may say in this connection:

1. That there is no such plan in existence, as far as I have been able to make out.

2. That aside from the great desirability and convenience of the Department having such a document at its command for its own particular uses, we have, on several occasions, been asked, in vain, for information that a contoured plan would readily have afforded.

3. That now a combined railway and highway bridge is being built, abutting on the Government lands of Nepean Point and railway companies are endeavouring to obtain access to the new Central Station by passing over the said lands and electric companies may also apply, in the near future, for the privilege of crossing them.

It therefore appears to me to be highly advisable that the survey in question be undertaken without delay, apart from any consideration such as that above put forward in reference to the desirability of testing the new tacheometer and accompanying rods in the field, on a large scale.

I would furthermore suggest that the re-levelling with the tacheometer and the new rods, of a 25 mile section or so of the continuous double rodded line of levels which I ran along the St. Lawrence with our U. S. C. & G. Survey geodesic level No. 1, be authorized, with the object of establishing a comparison between the results afforded by the two instruments and the two corresponding methods respectively; such levelling to be undertaken as soon as practicable without unduly interfering with more pressing work.

In conclusion, I may be permitted to point out to the Department:—

1°. That the information afforded by the precise levelling and gauging operations commenced under my direction in 1883-84, and carried on by me from year to year up to 1895-96, as regularly and expeditiously as more urgent official duties,

and the funds granted by Parliament for such purposes would permit—has already proved of considerable practical utility and scientific interest, in connection with the improvement of the St. Lawrence Ship Channel and other extensive works, as also the Dominion Tidal Survey and various other Government and Municipal Services.

2°. That in view of the valuable results already secured, just referred to and the prospective reduction of all elevations, whether on land or water, throughout the Dominion to a standard datum plane coinciding with the mean level of the sea, viz., that of the Atlantic Ocean at the mouth of the St. Lawrence, as practised in all advanced civilized countries, it is very desirable that our Geodetic Levelling operations be resumed with as little delay as possible.

3°. That the advisability of continuing this work of national importance will be still more fully realized by perusing the exhaustive Report of the United States Deep Waterways Commission, dated Detroit, Michigan, December, 1896, which was transmitted by the President to the Senate and House of Representatives at Washington, January, 1897.

I have the honour to be, sir,

Your obedient servant,

R. STECKEL,

*Engineer in charge, Canadian Geodetic Levelling.*

# THE SANGUET TACHEOMETER (SELF-REDUCING)

AS ADAPTED TO

## PRECISION LEVELLING

IN CONNECTION WITH

### A NEW GEODESIC ROD.

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I believe I am quite safe in stating by way of introduction, that there is scarcely a single step of any importance to be taken in life, that does not involve the measurement of space in some form or other: linear, superficial, solid, angular.

Confining here our attention to linear spaces or distances, it is evident that when such a space is easily accessible all around, its magnitude may, in general, be readily ascertained by applying to it a properly constructed and verified standard of length, such as a chain, a tape, a rod, a foot rule, a scale, etc., provided always we are prepared to devote sufficient time and attention to the measuring and testing operations to ensure correct results.

This primitive method of measuring linear space has been followed from time immemorial and, it may be said, continues to be almost universally adhered to up to this very day with little or no variation, whether distances have to be determined in or out doors, notwithstanding many difficulties that are experienced. I believe it will readily be admitted by all those who have any knowledge of the subject, that the laborious measurements required between accessible points, in connection with the extensive field operations which are inseparable from the ordinary practice of a civil engineer and that of a land surveyor, are unquestionably those where the old method yet followed presents the greatest drawbacks.

The principal, if not the only reason of the backward condition of what might be termed the science of measuring distances between accessible points on a large scale, appears to be due to the fact that nearly all the measurements which have to be made in the field either for engineering or purely surveying purposes are horizontal measurements, and that previous to the time (not more than ten years ago) when Mr. Sanguet, President of the Society of Topographical Engineers of France, first brought out his perfected self-reducing tacheometer, there was no instrument available to civil engineers and land surveyors, that would enable the n



to measure horizontal distances expeditiously with the degree of precision and reliability required for the field work, whatever its nature, which is nowadays generally exacted of them to keep pace with the advancement of science in every other walk of life.

This statement may, perhaps, appear a little overdrawn to civil engineers and surveyors generally, as many have, no doubt, availed themselves, to a greater or less extent, of the facilities afforded by properly mounted stadia wire telescopes for making distance measurements with the aid of a suitably divided rod, or used such instruments as Edgeworth's stadiometer, Eckhold's omnimeter, or one or the other of the various kinds of ordinary or improved tacheometers of the Porro type with stadimetrical telescopes having supplementary lenses, such as Richers', Colonel Goulier's and other similar distance measuring theodolites which have been brought out since about 1860, or may be the more recent "Milner distance measurer and level." In this connection I would point out, that notwithstanding the superior mechanical skill displayed in the construction of most of the distance measuring instruments hitherto devised, and the fact that many of them have rendered good service when used for reconnaissance field work, and preliminary surveys for projected lines of railways, canals and other important public works, it cannot be denied that they have all proved to be sufficiently wanting in one particular or another, to prevent them from being extensively taken up by professional men, for use in their general practice for the purpose they were chiefly intended by their inventors and constructors, viz., measuring horizontal distances.

I do not intend to describe here in detail the short-comings of each one in particular of the class of instruments referred to so far as I might be in a position to do, for that would be a big undertaking, and I see no practical advantage to be gained by following such a course. I will content myself by pointing out:

1. That, as a rule, the distances measured with those instruments are not the horizontal projections of right lines drawn between two stations, which alone are necessary for plotting purposes; but distances measured in each case in the direction of the line of sight, which have to be reduced to the horizon and otherwise corrected by means of computations more or less complicated according to the degree of accuracy aimed at.

2. That in nearly all such instruments the measurement of a distance is effected by comparing the micrometrical interval which separates two stadimetrical wires stretched on a diaphragm, with the distance or height intercepted on a carefully divided rod by the visual rays determined by the said wires.

Now, the height intercepted on a rod by two visual rays determined by stadia wires, is directly proportional to the distance from the rod to the anterior focus (in front) of the objective, when an ordinary astronomical stadimetrical telescope is used, and to the distance from the rod to the centre of the instrument, when such centre is rendered anallatical, that is to say, when the summit of the diastimetrical angle is moved from the anterior focus of the objective to the centre of the instrument, viz., by means of an extra lens interposed between the objective and the eye-

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piece, as was first done, about 1840, by Porro, a distinguished officer of the Piedmontese engineer corps. But readings taken on a rod held vertically with the aid of any one of the instruments just mentioned, seldom give us a horizontal distance, which is the only one we care to know when we want to make a plan of a tract of land, a railway, a canal, etc.; but almost invariably a length of some inclined line to which a correction or corrections—the so-called reduction to the horizon—must be applied before it can be used for plotting purposes.

And should we feel disposed to adopt the neither very simple nor very expeditious “method of obtaining linear distances, and also of taking levels on sloping ground, without moving the staff or the instrument,” which is recommended by the inventor of the “Milner Measurer,” in a leaflet issued about June, 1897, viz., by holding in every case the rod perpendicularly to the line of sight, which operation, if performed as suggested, must of necessity be, in a sense, mere guess work, the difference between two readings corresponding to the lines of sight determined by two stadimetrical wires would again give us but a distance, rod to instrument, along the inclined line of sight. Not only has this sloping distance to be reduced to a corresponding horizontal one; but it is furthermore necessary to diminish or increase, as the case may be, the length so obtained by the small distance intervening between the point on the ground at the foot of the rod of which the position is to be established, and the horizontal projection of the point of intersection of the rod as inclined, with the line of collimation or optical axis of the telescope produced.

True, it may be said, a correction such as that last described is not needed when a vertical rod is employed, or by holding a stadia horizontally over the point the position of which is to be established. As a matter of fact, the vertical stadia is almost invariably used because it is easier to maintain a rod correctly in this position than in any other; but on account of the obliquity of the axis of its divided face to the visual rays, when these are inclined, as is usually the case, the height intercepted on the rod by the wires is greater than that which would obtain, in the same conditions, on a rod held perpendicularly to the line of sight, therefore the distance computed with such a height used as the argument, is greater than that which actually intervenes between the rod and the instrument along the line of collimation, and has to be correspondingly corrected.

In view of the rather complicated and tedious corrections and reductions which are found to be an unavoidable accompaniment of the, at first sight, apparently very simple and attractive ordinary processes of stadimetrical distance measurements, when it is important to attain a certain degree of accuracy, it is not surprising that inventors should at different times have seriously applied themselves to devise mechanical means for securing horizontal distances by direct observation, as far as practicable.

Between, say 1850 and 1852, several ingenious devices applied to instruments of the Porro type and to others have been proposed at various intervals, chiefly by French and German authors, for reducing by means of special processes and manipulations, the distances measured to their horizontal projections, all of which met with but a limited measure of success. Among such may be cited: Porro's sthenalatic telescope, Peaucellier and Wagner's telescope, the Wagner Fennel reducing



device and some tacheometers of Swiss construction with adjustable stadia wires, as regards the intervening space, so as to secure a constant generating number for one and the same distance, whatever the inclination of the line of sight.

Finally, there have been brought out since 1865, a few instruments which effect the reductions to the horizon entirely automatically, that is to say: where the positions to be given to the telescope to attain the desired end are determined by purely mechanical means, without one having to make either special readings, adjustments or other operations or computations.

In 1865, Mr. Sanguet, the inventor of the instrument which forms the subject of this Memo., constructed a distance measuring instrument to which he gave the name of "Longimètre." Finding that this instrument had certain drawbacks, he modified it in several particulars and then gave to the public in 1866, his self-reducing tacheometer as first constructed by him. Again, at the Universal Exposition held in Paris in 1889, an instrument called Charnot's tacheometer was exhibited which much resembles Mr. Sanguet's original "Longimètre," and although an ingeniously contrived, accurate and fairly serviceable self-reducing instrument in the true sense of the word, presents still some of the defects found to be inherent to the "longimètre," and to the original model of the Sanguet tacheometer, and does not permit of combining hitherto unattained precision with complete and unfailing control of the results in the ordinary run of field operations, with the same extreme facility and feeling of satisfactions as with the more recent perfected self-reducing tacheometer known under the name of "Tacheomètre auto-réducteur Sanguet." For this perfected instrument the inventor was justly rewarded with a gold medal at the same International Exposition of 1889, thus receiving the highest honour conferred on exhibitors in recognition of the merits of their contributions.\*

After receiving from the Department the necessary authority for the purchase, direct from the makers, of one of these unquestionably original, ingenious and on the whole truly remarkable instruments modified as I had suggested, I lost no time in placing the order for the new "Tachéomètre Sanguet" with Mr. Cabasson, of Paris, who is the sole agent for the same.

This gentleman placed me in direct communication with Mr. Sanguet, the inventor himself, with whom I entered into a full discussion of the pros and cons of the proposed modifications and additions to the original model of his instrument as got up for general use in France, with a view of securing a tacheometer: (a.) That would prove especially serviceable for precision levelling and for measuring correctly greater distances than those falling within the every day practice of a surveyor or an engineer at work in thickly settled countries, more particularly such long

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\* A few years ago a new surveying instrument called the "Universal Tacheograph"—the joint production of Professor Victor Ziegler, widely known as a writer on geodesy, and Mr. C. Hager, a reputed scientific instrument maker of Luxemburg—was introduced into continental Europe and there received with much favour by surveyors and engineers. As its name indicates, this instrument belongs to the class of plane table theodolites, which instruments are intended for use only where the surveys required are of such a nature that the results of the operations performed can be plotted with advantage on the field, directly after being secured. It is stated, however, that there are various forms of such instruments made for special purposes.

The Ziegler-Hager Tacheograph is constructed in some respects on the same lines or according to the same principles as the "Tacheomètre Sanguet auto-réducteur," and the chief merits of the two instruments are nearly alike. I am doubtful, nevertheless, whether, on the whole, the former would prove as serviceable as the latter to meet the requirements of the engineering profession in a new, sparsely settled country of large extent.



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stretches as have to be measured when crossing wide streams, ravines, valleys, etc. (b.) That would permit of angles being measured in degrees and minutes, or according to the sexagesimal division of the circle, as is still the custom in Canada and English speaking countries in general, in place of the grades and centigrades of the centesimal division now almost exclusively used in France.

As a result of our deliberations, Tacheometer No. 115 supplied to the Department was constructed so as to meet my views just stated, as far as practicable: the fundamental principles of the original invention were, however, in no way departed from.

The modifications and additions just referred to which I considered necessary, will be described in detail, and the reason of their introduction explained, after we shall have gained an insight into the working and resources of this new measuring instrument from the following summary description of its parts and their combination, which is on much the same lines as that given by the inventor himself in the pamphlet he sends out with each tacheometer.

The "Tachéomètre Sanguet" (see Illustration No. 1) is composed of two principal parts, one of which is destined for measuring azimuthal or horizontal angles, and the other for measuring distances and declivities. The same as in all theodolites, the first part consists in a graduated horizontal limb which revolves about a vertical axis mounted on a metal stand having three arms, each of which is provided with a levelling screw *C*. An improved declination tube *D* is screwed to the under side of the divided circle.

The base of the second or upper portion is an alidade circle provided with verniers which turn round inside the divided circle, being concentric thereto. On top of this inner circle is fixed a horizontal bar *B* which carries to the right: a fork-shaped pillar *Y* with wyres for the journals of the transverse axis around which the telescope revolves to turn in, to the left: a divided vertical straight edge *FH*, and in the centre a spirit level *N*, for levelling the instrument.

As in all transits and theodolites, the rotation of the whole instrument about its vertical axis, as well as that of the alidade or vernier circle alone can be stopped at will, viz.: by tightening the clamp screws *P'* and *P''*, and the positions in azimuth of both the divided and vernier circles can be adjusted respectively with the aid of the tangent screws *R'* and *R''*.

At each end of the divided flat straight edge *FH* there is a lug *G*, fixed at right angles to its axis, and cylindrical guide holes are bored through both lugs on one and the same vertical axis. In these holes turn the close fitting ends of a prismatic guide rod *T*, which is parallel to the straight edge, and rests on the point of a vertical adjusting screw *R*.

A clamp carrying a vernier is fitted to the rod *T*, which can be moved from end to end and fixed at any point of its course by means of a tightening screw *P*. To this clamp is fixed in the middle of its rear face, a steel knife intended for use as a support for the telescope at its eye end.

The telescope is actually not in equilibrium when supported only on the journals of its transverse axis; the latter being secured to the telescope near the

objective, viz., several inches from its centre of gravity. On the right and left hand sides of the telescope small steel straight edges  $K$  are fixed to the tube near its eye end, having their flat faces in planes perpendicular to the azimuth circle and those edges which rest on and slide over the steel knife, one at a time, parallel to the optical axis or line of collimation.

The inclination of the telescope can thus be modified at will; after having loosened the clamp  $P$ , we can slide it together with the telescope along the prismatic guide rod  $T$ , to screw it tight again when the object to be sighted comes within the field of view. The slow motion screw  $R$  enables us afterwards to rectify the pointing of the telescope in a vertical plane. The vernier carried by the clamp  $P$  indicates (usually) on the vertical divided straight edge, or scale of slopes, the inclination of the visual ray in decimal parts of the horizontal projection  $r$ , of the portion of the said ray extending from the axis of rotation of the telescope to the line of the knife edge, taken as unity.

The telescope of the "Tachéomètre Sanguet," is a simple astronomical telescope, similar to that of an ordinary inverting level, transit or theodolite, with but two wires at right angles to each other for sighting, and having no supplementary lenses or cross hairs or other lines for sighting purposes of any kind. As there is but one horizontal wire, it is clearly impossible to read on a speaking rod, a height above 0 different from that which the telescope points to, so long as the inclination of the latter remains unchanged. The measure of distances is based on several successive rod readings which are obtained as follows:—

The nut of the slow motion screw  $R$  is connected by means of a vertical crank, to the end of the short arm of a lever  $L$  having as a fulcrum a horizontal axis imbedded at  $M$  in the rear face of the divided vertical straight edge or slope scale  $FH$ , and the long flat arm of which extends past the fork shaped pillar  $Y$  where it is terminated by a rounded handle. In the long flat handle  $L$  there is screwed near its free end, a cylindrical steel pin or peg, the flat end of which touches the lateral face of the fork shaped pillar while the lever remains in one and the same position; the upper side of the peg butting against one or other of four similar steel pegs or pins  $a, b, c, d$  screwed into the side of the pillar, along an arc of a circle described from the fulcrum axis as a centre;  $a$  being the lowest and  $d$  the highest of this series of pins.

Solicited by its own weight, by that of the telescope, and by the action of a spiral spring  $S$ , the prismatic guide rod  $T$  always tends to descend. And by drawing the long lever arm lightly to one side, so as to make the pin inserted in it clear that in the pillar against which it abuts, the rod  $T$  together with the short arm of the lever drops with a snap and the next higher peg in the pillar is struck hard by the pin in the long arm in its upward motion; at the same time the telescope turns on its transverse axis.

As the lever  $L$  can take the four positions corresponding to pins  $a, b, c$  and  $d$ , the inclination of the optical axis or line of collimation of the telescope, can be made to assume four different values by the simple handling of this lever, which give us four readings on the rod affording differences that bear constant ratios to the horizontal distance to be measured. There being six such differences (for six is the number of possible combinations of four readings taken two by two), the result is that we have at our command six elementary ratios between rod interval and distance,



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of which any single one is sufficient for determining the distance of the rod from the instrument. I may here observe that the lever  $L$  with one arm, say ten times longer than the other, has evidently been brought into requisition by the inventor, with the important object in view of—so amplifying the very small arcs or heights, which the eye end of the telescope has to traverse to determine visual rays that afford readings on the rod differing only by from  $\frac{4}{1000}$  to  $\frac{10}{1000}$  of its distance from the instrument—as to render the use of an automatic device for the determination of the said small displacement of visual rays, practicable both as regards mechanical execution and facility of operation.

Now the three intervals  $\overline{ab}$ ,  $\overline{bc}$ , and  $\overline{cd}$  between consecutive pins, which are adopted for the tacheometer of the ordinary construction, bear to each other the ratios of the numbers 10, 8 and 4. That is to say: in the tacheometer of the common type the pins are inserted at such intervals in the side of the fork shaped pillar, that by raising or depressing the long lever arm through the distance  $\overline{ab}$ , the short arm will depress or raise the prismatic guide rod  $T$  and with it the telescope, through a vertical space equal to  $\frac{1}{100}$  part of the radius  $r$  adopted for the unit of the scale of tangents or slopes, or which is the same thing, for the length of the perpendicular let fall from the centre of the transverse axis around which the telescope revolves, on to the vertical path described by the steel knife edge when sliding up or down along the rear of the guide rod, and hence such working of the handle of the long lever arm, will also cause a corresponding change in the rod reading equal to  $\frac{1}{100}$  part of its distance  $R$ , or to  $(0.01)R$ , from the same transverse axis.

Again, by moving the same long arm through  $\overline{bc}$  the corresponding change which obtains in the rod reading is equal to:  $(0.008)R$ , and finally by passing over  $\overline{cd}$  with the lever, the rod reading will be altered by  $0.004R$ .

In the ordinary “Tachéomètre Sanguet” the four displacements of visual rays determined by the four pegs afford six corresponding rod intervals which are all different, and when arranged in the order of their importance, the values of these intervals are:

$$\begin{aligned}\overline{dc} &= \frac{4}{1000}R, \quad \overline{cb} = \frac{8}{1000}R, \quad \overline{ba} = \frac{10}{1000}R, \\ \overline{bd} &= \frac{12}{1000}R, \quad \overline{ac} = \frac{18}{1000}R, \quad \text{and} \quad \overline{ad} = \frac{22}{1000}R.\end{aligned}$$

The most generally useful of these six relations between the intervals intercepted on the rod and its distance from the instrument, is evidently the third, viz.: that afforded by a displacement  $\overline{ab}$  of visual rays causing  $\frac{1}{100}$  part of the distance  $R$ , or a height of  $(0.01)R$ , to be intercepted on the rod.

With a view of controlling the readings and increasing the precision of the results, it is however advisable to combine two or three of the above six elementary ratios of rod interval to distance, whenever time will permit.

Thus if we combine:

1.  $\overline{bc} = (0.003)R$ , and  $\overline{bd} = (0.012)R$ , the following relations must obtain when all the readings are correctly taken, viz.:

$$\overline{bc} + \overline{bd} = (0.020)R \quad \text{and} \quad \overline{bd} - \overline{bc} = (0.004)R = \frac{\overline{bc}}{2} = \frac{\overline{bd}}{3} = \frac{\overline{bc} + \overline{bd}}{5}.$$



2. The combination of  $\overline{ac} = (0.018)R$  with  $\overline{ad} = (0.022)R$ , gives:

$$\overline{ac} + \overline{ad} = (0.040)R \text{ and } \overline{ad} - \overline{ac} = (0.004)R = \frac{\overline{ac} + \overline{ad}}{10}.$$

3. If we combine the three ratios:  $\overline{ab} = (0.010)R$ ,  $\overline{ac} = (0.018)R$  and  $\overline{ad} = (0.022)R$ , the relations which afford us a means of checking in the office the operations performed on the ground are:

$$\overline{ab} + \overline{ac} + \overline{ad} = (0.05)R \text{ and } \frac{\overline{ab} + \overline{ac} + \overline{ad}}{5} = \overline{ab}.$$

The last combination affords the greatest degree of precision attainable with a minimum number of pointings, it should always be used when great accuracy is desired. When an obstacle between the rod and the observer prevents making one or the other of the three readings without changing the position of the clamp  $P$  on the guide rod, it is usual to omit such reading altogether.

When the visible part of the rod is too short to permit of reading on it heights equal to:  $(0.018)R$  and  $(0.022)R$ , the interval corresponding to  $(0.01)R$  is first read, after which having left the lever arm butted against the pin  $b$ , the clamp is moved up or down and the cross wire again made to bisect the zero mark by working the slow motion or micrometer screw  $R$ , that is to say: a new pointing is made which will enable us to read off the rod intervals corresponding to  $\overline{bc} = (0.008)R$  and  $\overline{bd} = (0.012)R$ .

We have, in such case, the following relations to control the rod observations, viz.:

$$\overline{ab} + \overline{bc} + \overline{bd} = (0.030)R \text{ and } \frac{\overline{ab} + \overline{bc} + \overline{bd}}{3} = \overline{ab}.$$

Now for determining the horizontal projection  $R$  of the radius vector of a point on the ground of which the position is to be established, that is to say: the distance from the rod to the transverse axis of the instrument reduced to the horizon, we have the relations:

$$R = 100 \overline{ab} = \frac{100 \overline{ac}}{1.8} = \frac{100 \overline{ad}}{2.2} = \frac{100 \overline{bc}}{0.8} = 100 \overline{bc} + \frac{100 \overline{bc}}{4} = \frac{100 \overline{bd}}{1.2} = \frac{100 \overline{cd}}{0.4}$$

and by combination, 56 additional means of arriving at the value of this radius, such as:

$$\frac{100 (\overline{ab} + \overline{ac} + \overline{ad})}{5} = 100 \frac{(\overline{ab} + \overline{ad})}{4} = \frac{100 (\overline{ac} + \overline{cd})}{3} = \frac{100 (\overline{ad} + \overline{bc})}{3}.$$

As it might be a matter of some interest to engineers to know for what particular reason the displacements of the visual rays were arranged for, so as to cause consecutive intervals to be intercepted on the rod, bearing to each other the ratios of the numbers 10, 8 and 4, when 10 and its submultiples 5 and 2, or some other simple numbers might apparently have proved equally well, if not better suited for the purpose intended, I may state that the ratios  $\frac{10}{100}$ ,  $\frac{8}{100}$  and  $\frac{4}{100}$  were selected because, while they permit of combinations sufficiently simple being made, to render the finding out of mistakes in the office and the correction of the same a comparatively easy task, yet they necessitate, when passing from one reading of the series

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to another, an arithmetical operation which cannot be performed with such great rapidity, as to leave room for suspicion that the operator may have been tempted, in order to save time, to substitute for the actual supplementary rod readings asked of him, fictitious readings deduced by computation from the interval between the two first readings. It is moreover claimed: that the variety of the six elementary ratios corresponding to the numbers 4, 8, 10, 12, 18, 22, as given above, permits of properly adjusting the range of the instrument in accordance with the degree of precision to be attained and getting readily over difficulties which arise when a part of the rod is hidden from the observer by an intervening object.

From what I have just stated, it will be seen that the "Tachéomètre Sanguet" affords to engineers and surveyors, advantages and resources for the accurate measurement of distances in the field, far ahead of any presented by other instruments proposed as substitutes for the chain or steel measuring band or tape. Indeed it leads to results so much superior to the best secured with all other such instruments equally as regards accuracy, despatch and control of field operations, that I feel convinced the new tacheometer or measuring instrument, needs only to be placed in the right light before practical professional men and contractors to come into general use before very long to the exclusion of nearly all their other ordinary surveying instruments, excepting of course a suitably divided rod.

In support of this opinion I may state that while it is found, in general, that the result of a very good chain measurement is affected by an error in excess amounting to between 3 and 6 hundredths of a foot per 100 feet, the calculated mean error which one may make in measuring a distance of 100 feet, with the new tacheometer by combining three rod intervals, is but  $\frac{2.8}{100}$  of a foot, and the results of numerous experiments show, that the mean error which actually obtains is even less than at the rate of 0.28 foot per 100 feet, viz.:—little over 0.2 ft. per 100 feet.

Again, with a view of testing the practical working of the tacheometric method of surveying, a plot of ground 538.7 acres in area and containing 605 parcels of land having the form of elongated trapeziums was surveyed in France both in the ordinary way, viz.: by running lines between angles and measuring them with the chain, &c., and also entirely with the aid of the new tacheometer and a properly divided and figured rod.

The survey of this plot of ground actually kept the party which operated in the ordinary way, 336 hours at work in the field, while the party that worked with the Sanguet tacheometer completed the whole field work in 121 hours. The party surveying with the tacheometer had to be more numerous than the other; but the cost of the tacheometer survey proved smaller than that made in the ordinary way, in the ratio of 411.4 to 789.6. So that it may be said that by the use of the new self-reducing tacheometer, the expense was in this case, reduced by one-half and the time spent on the work by two-thirds.

I may add that the "Tachéomètre Sanguet" was critically examined in detail and experimented with by the Official Commission appointed to examine the instruments of precision exhibited at the Paris International Exposition of 1889, and more recently by the "Commission extra parlementaire du Cadastre" of France.



Both these Commissions of scientific and practical men of the highest standing have rendered the verdict: that this is the most perfect instrument for surveying purposes that human ingenuity can well devise, and hence bestowed the highest encomiums on its inventor for his great achievement.

Finally, the Commission of Inventions, instituted at the National School of "Ponts et Chaussées" in France, strongly reported in favour of the extended use of the "Tachéomètre Sanguet" by the members of this justly celebrated corps of engineers, and ordered the purchase of some instruments to be kept in their depot at the disposal of engineers who would require the same.

Let us return now to our special Tacheometer, No. 115. In this instrument: (a) The magnifying power has been increased from about 35 to say 50, which could be done without difficulty; the only slight drawback to the change being the little extra weight which had to be added to the instrument in lengthening the telescope from 10·83 to 15·83 inches and augmenting its diameter correspondingly, for, we had no supplementary lens to reckon with, intercepting a large portion of the light that passes through the objective, such as the lens used by Porro to render his telescope annallatic.

The increase in the power of the telescope was considered necessary in order to render the instrument more especially serviceable for precision levelling operations, and for the accurate measurement of greater distances than those falling within the every day practice of a surveyor or an engineer, in old settled countries like France, as already stated.

Now it would manifestly be of a little use to have at one's command a telescope of sufficient power to enable us to distinguish and bisect correctly a target stripe say 3,000 or 4,000 feet off, if we had not also the means of measuring very accurately the inclination of the optical axis when directed to the centre of this target, either in reference to the line of sight passing through the centre of another target fixed on a rod at a known distance from the former, or in reference to a truly horizontal line or one running in any given direction above or below the horizon. Hence:

(b) The ordinary slow motion or adjusting screw R on the end of which the guide rod, the clamp with knife edge and the eye end of the telescope are supported in common and by means of which they are adjusted in position, has been replaced by a micrometer screw with a pitch corresponding to 100 revolutions per inch, which is about the limit, as regards fineness of thread, where the number of revolutions indicated on a figured scale can still be comfortably read off with the naked eye.

Again, it is evident that the micrometer screw R together with the prismatic guide rod T and the knife edge should be placed as far as practicable from the axis of rotation of the telescope, otherwise some difficulty might be experienced to measure with precision, small spaces which could be easily distinguished looking through our telescope of increased optical power. It is also necessary that sufficient room be available between the transverse axis of the telescope and the longitudinal axis of the micrometer screw for the convenient installation of a spirit level with an air chamber at one end, and of a degree of sensitiveness commensurate with the small change of inclination produced by moving the micrometer head over one of its divisions.



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Now, with a micrometer screw of the pitch settled upon, the most convenient length to adopt for the unit of the vertical scale of tangents, that is to say: for the radius  $r = 1$  of the smallest circle that can be described from a point on the axis of revolution of the telescope near its optical axis as a centre, so as to be tangent to the path followed by the knife edge, would evidently be 10 inches or  $\frac{5}{6}$  of a foot—for, in such case each division of a micrometer head divided into 100 parts would indicate a vertical motion of the screw equal to  $\frac{r}{100.000}$  or  $(0.000.010)r$ . This dimension would be more than sufficient to satisfy all requirements in other respects, unfortunately, however, the increase of  $r$  from 16 centimeters=6.30 inches, its length in the Sanguet tacheometer as now usually constructed in France, to 10 inches, would render the instrument altogether too bulky and heavy to be used for the ordinary run of field operations. Hence:

(c) The minimum distance between the axis of rotation of the telescope and the knife edge (or the line of tangents) had to be reduced to 8 inches =  $\frac{2}{3}$  ft. and the number of divisions on the micrometer head increased from 100 to 125, each of which still represents  $\frac{1}{100.000}$  part of  $r$  or  $(0.000.010)r$ .

On account of the ordinary slow motion screw which is provided in tacheometer No. 1 under the prismatic guide rod for adjusting the inclination of the telescope, etc., being replaced by a fine micrometer screw  $R$  in tacheometer No. 115, (See Ill. I in pocket) the zero of the vertical or slope scale of this instrument—instead of being placed, as usual, near the centre of the flat vertical straight edge  $FH$ , and so as to correspond as nearly as practicable to a truly horizontal axis when the instrument is accurately levelled—was lowered to the foot of the said straight edge; the object being to eliminate all negative quantities from the field book, both as regards the vernier and micrometer readings, also to obviate the necessity of making such readings in contrary directions. On the vertical scale of tacheometer No. 115, a perfectly level line of collimation corresponds therefore very nearly to reading 0.50 instead of 0.

A detached chambered double faced level,  $O$ , is used on the telescope, the bubble tubes of which are ground to a circle of such radius that a division of the circumference  $\frac{1}{12}$ -inch in length will correspond to an angle of 5 seconds. This level has thus been rendered four times as sensitive as the single face level on the alidade bar, and about twice as sensitive as the double faced level used in the ordinary instrument. An air chamber is provided at one end to permit of regulating the length of the bubble according to the temperature of the atmosphere, etc., so as to keep it within convenient limits.

The diaphragm placed in the telescope for defining the position of the optical axis carries no cross wires or hairs. Instead, fine lines are engraved at right angles to each other, through the centre of the plane face of the outer or field lens of the Ramsden eye piece; the diaphragm serves to delimitate the pencil of rays disposed symmetrically around the line of sight which joins the intersection of the cross lines on the lens and the centre of the field of view afforded by the objective. Lines engraved on glass are preferable to wires or spider webs, as they are not affected by the humidity of the atmosphere, nor can they be broken, the eye piece has, however, to be adjusted to the proper length, according to the sight of the observer, to render the lines plainly visible to him.

The adjustment for collimation is made in precisely the same manner as when wires are used, viz., with the aid of four steel capstan screws V.

I have just mentioned double faced levels. Such levels do not appear to be much known outside of Continental Europe; but well deserve to be more widely known and better appreciated than they are, generally speaking.

A double faced level consists, as all other spirit levels, of a longitudinally curved glass vial or tube filled entirely with alcohol or ether, excepting a small volume of air imprisoned to form a bubble at the highest point of the tube. The bubble tube of such a level is, however, formed of two halves of semi-circular cross section, having their inner or concave surfaces ground longitudinally so as to assume a uniform convex curvature, and which are subsequently united along their sides and hermetically sealed at their ends after being filled with spirits, as just described. Scales having divisions suitably proportioned to the degree of longitudinal curvature are engraved on the upper and lower outside faces of the tube, symmetrically on either side of a plane passing through the centres of the generating circles of the upper and lower interior ground surfaces of the spindle shaped tubular envelope, and the whole glass tube when completed is inclosed in a brass tube mounted on a brass plate. So that, if the air bubble is brought to the centre of the divided portion of the double faced tube on one side, upper or lower, it will also lodge precisely in the middle of the scale engraved on the opposite side when the tube is reversed; the bottom being brought to the top, or vice versa.

When a double faced level is fixed to the side or top of a telescope, mounted as that of the tacheometer, it is evident that unless the air bubble, after being brought to the centre of the divided scale and summit of the tube on one side, also comes to rest in the centre of the scale when the telescope is inverted, by lifting the transverse axis out of its wyes and causing the journals to exchange places,—the optical axis of the telescope cannot be a truly horizontal line in either its erect or its inverted position—and that when the instrument is not in such perfect adjustment the horizontal line of sight must invariably lie midway between the pointings made with the telescope in the said erect and inverted positions.

Hence, in order to establish the correct elevation of a truly horizontal line of collimation, we need only take the mean of two rod readings, one of which is taken when the telescope is in its erect position, or say with the pinion head on top and the double faced level *O* on its right hand side, and the other when it is in its inverted position or with the level on its left side and the pinion head below the tube. For, by inverting the telescope, we not merely correct the first reading for the inclination of the line of sight to the horizon, but also for any error of collimation by which the said line might be affected.

It will thus be seen that by working with a double faced level, we reduce by one-half the number of readings that have to be taken when an ordinary pivot or geodesic level, with independent striding level, is used in carrying on precise levelling operations. For, in such case we have to make one reading with telescope erect and level direct, another with telescope erect and level reversed, a third with level reversed and telescope inverted, and a fourth with telescope inverted and level direct.



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This is not the only advantage which can be claimed for the double faced level. By using this level we need no longer feel anxious lest some results might be vitiated on account of dust or dirt having adhered to the feet of the independent or striding level or to the collars on which it rests; nor are we likely to have to spend as much time in adjusting the level after carrying it for a short time over rough ground, and especially after jumping fences or ditches and climbing over rocks, as when working with a detached striding level, the steel spiral springs of which become easily distended or else flattened.

The double faced level need never be detached from the telescope during the progress of the field operations, whether they are carried on with the ordinary instrument (No. 1) or with tacheometer No. 115. In the latter case, when the instrumental work to be done from a station is completed, the recorder must lift the telescope, inclusive of level, out of the wyes to take it in a special leather case hung over his shoulder, to the next station, thus relieving the observer of  $5\frac{1}{2}$  pounds of the part of the instrument he usually has to carry and reducing the weight left in his charge to  $20\frac{1}{4}$  pounds, tripod included. The tacheometer of the ordinary construction weighs but  $18\frac{1}{4}$  pounds with tripod, exclusive of double faced level, which has a weight of from  $\frac{1}{2}$  to  $\frac{3}{4}$  pound. The United States Coast and Geodetic Survey precision level weighs 23 pounds with tripod, not including the striding level which has to be carried separately.

Now a telescope with the magnifying power increased to about 50 diameters, permits of hundredths of a yard being read and thousandths of a yard being estimated on a rod suitably divided into hundredths and half hundredths of a yard, at distances up to from 275 to 350 yards according to the strength of the observer's eye sight. That is to say: when the telescope is pointed to zero on the rod the number of whole yards contained in the distance  $R$ , rod to instrument, may be read off directly by displacing the optical axis so as to intercept a height on the rod equal to  $\frac{1}{100}$  of the said distance  $R$ , or equal to  $0.01R$ , and tenths of yards can be estimated by the eye. It appears therefore that in order to be able to read on a rod the three intervals corresponding to:  $\frac{1.0}{1000}$ ,  $\frac{1.8}{1000}$  and  $\frac{2.2}{1000}$  of a distance, without moving the clamp, it would be necessary to have at one's command a rod  $0.022 \times 350 = 7.7$  yards in height, which is nearly double the length of the rods commonly used for precision levelling operations.

By making use of a rod 12 to 13 feet long, viz., a rod of as great a length as practical experience has shown can be easily held vertical, conveniently handled, carried in the field and put up for the transportation and kept tolerably straight and in good order generally, for any length of time, many of the sights that can be easily taken with a telescope of the power mentioned necessitate a second pointing and some a third pointing, in order to secure at every sight three consecutive rod intervals intercepted by visual rays, respectively equal to:  $\frac{10R}{1000}$ ,  $\frac{8R}{1000}$  and  $\frac{4R}{1000}$

But it may be asked, what great necessity is there for establishing at every sight the values of the whole three intervals in question, in connection with precision levelling, considering it is not essential that the distance rod to instrument, be very accurately known for determining the difference in elevation between two points.



Quite true, it is not absolutely necessary to measure very correctly the distance from the instrument to the rod for such purpose; but it is very important for us to be in a position to exercise such a perfect control over all the rod readings, including those corresponding to the horizontal or fore and back sights, as will enable us to readily correct on the ground, or in the office, by means of the entries in the field book, any error that may be discovered after the removal of the instrument from a station whence an erroneous reading was made.

Now it is only by making the four rod readings required, to establish the length of each one of the three contiguous spaces intercepted by the horizontal wire in the positions of the telescope determined by the four pins or pegs, *a*, *b*, *c*, *d*, or failing which, by making all the rod readings found to be necessary to establish the length of each one of three corresponding spaces which are not all contiguous, that we can manage to secure the desirable perfect control in question, hence the advisability of invariably taking such a set of four or more readings whenever possible.

A little reflection will convince us that all the four readings mentioned are really essential to fully ensure the desired control.

Suppose for a moment, we confine ourselves to three readings, viz., those corresponding to the positions *a*, *b* and *c* of the lever; those readings will give us the intervals  $\overline{ab}$ ,  $\overline{bc}$ , and  $\overline{ac}$  bearing to each other the ratios of the numbers 10, 8 and 18.

Now let us say that instead of the true height *b* corresponding to position *b*, we read by mistake a greater height *B*, we will then have  $\overline{aB} > \overline{ab}$  and  $\overline{Bc} < \overline{bc}$ , while  $\overline{ac}$  retains its true value, and hence we have also:  $\frac{\overline{aB}}{\overline{Bc}} > \frac{10}{8}$  and  $\frac{\overline{ac}}{\overline{aB}} < \frac{18}{8}$ .

These inequalities are, no doubt, a sure indication that a mistake has been made somewhere; but they do not supply the means of locating the error. For this purpose a fourth reading, and an additional contiguous interval  $\overline{cd}$  are indispensable; this interval will show us which one of the three spaces  $\overline{ab}$ ,  $\overline{bc}$ ,  $\overline{ac}$  is right and therefore enable us to detect the wrong reading and correct it.

In the case just supposed, we readily find out that  $\overline{cd} > \frac{4}{8} \overline{Bc}$  and  $\overline{cd} < \frac{4}{10} \overline{aB}$ ; but that  $\overline{ac} = 4.5$  or very nearly so, which is as it should turn out, whence we necessarily conclude that readings *a* and *c* are right and that reading *B* is wrong, viz., too large. As will be shown further on, however, when two lines of precise levels are run simultaneously, or which is the same thing when a line of such levels is double rodged, more expeditious means of verifying and controlling rod pointings and readings are available than by taking supplementary readings as above explained—and in order to save time, can be taken advantage of when accuracy in the measurement of horizontal distances is only of secondary importance.

Now, when a tacheometer is more especially intended for use as a levelling instrument, as is the case with No. 115, the horizontal fore and back sight readings are always the most important of the whole series, and the intervals to be intercepted on the rod by moving the lever *L* from one of the pins to a higher or a lower one, have necessarily to be reckoned on either side from the intersection of a hori-

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zontal line of sight with the rod, at whatever figure such a line may strike the scale; that is to say: almost invariably from a complex number including several decimals, instead of from a round or other exact whole number, as is usually done when distance measurements are made for ordinary purposes. There exists therefore, in the case of a tacheometer intended chiefly for precision or geodetic levelling, not the same danger of an observer being tempted to put in fictitious figures, in place of those that would be afforded by actual readings, in order to gain time, and there is no longer the same ground for hesitating to dispose the butting pins so as to determine visual rays that will intercept intervals on the rod, bearing to each other more simple consecutive ratios than those of the numbers 10, 8 and 4, which have been adopted for the ordinary tacheometer. Accordingly, for No. 115 the numbers used for such ratios were limited to two, viz., to 10 and its submultiple 5; the butting pins *a*, *b*, *c*, *d* being placed so as to give rod intervals corresponding to:

$$\frac{10R}{1000}, \quad \frac{15R}{1000} \quad \text{and} \quad \frac{20R}{1000}, \quad \text{in place of:} \quad \frac{10R}{1000}, \quad \frac{18R}{1000} \quad \text{and} \quad \frac{22R}{1000}$$

and the number of different ratios thus reduced from six to four, viz.:

from 4, 8, 10, 12, 18 and 22—to 5, 10, 15 and 20.

While with the ordinary tacheometer (No. 1) the sum of the rod intervals determined by the three pairs of rays,  $\overline{ab}$ ,  $\overline{ac}$  and  $\overline{ad}$ , viz., the greatest height that can be intercepted by any three pairs of the four rays *a*, *b*, *c* and *d* is equal to  $0.050R$ , the greatest corresponding rod space that can be obtained with tacheometer No. 115 is but  $0.045R$ .

When, however, we take into consideration the fact that in tacheometer No. 115 the magnifying power and the radius *r* (or perpendicular distance of the centre of the conical gun metal axis of rotation of the telescope, from the plane travelled in by the steel knife edge), have been increased, viz., the former from about 35 to 50 and the latter from 6.30 to 8 inches, it becomes apparent that although the pencil of visual rays determined in the ordinary tacheometer by passing the lever *L* from pin *a* to pin *d* or vice versa, and which intercepts a height  $(0.022)R$  on the rod, has been slightly contracted, viz., so as to reduce this distance to  $(0.020)R$ , it cannot be said that the accuracy of the results as regards distance measurements, has been diminished, indeed the reverse is the case, as we shall see presently.

At the same time a tacheometer such as No. 115, where the combination of four consecutive readings from a single pointing—which gives the best results as regards distance measurements—determines an aggregate rod interval of but  $0.045R$ , is evidently not so well adapted on the whole for measuring distances, as a tacheometer of the ordinary construction, where the aggregate rod interval determined by the corresponding combination of four readings from one and the same pointing is exactly equal to  $0.05R$ .

While in the latter case we have simply to multiply the sum of the rod intervals, or  $0.05R$ , successively by two and then by ten, in the former, we have to multiply the sum of the said intervals, or  $0.045R$  by two by ten and then by 1.11111 . . . . . When, however, more than one pointing has to be made, in order to secure the four readings corresponding to the positions *a*, *b*, *c* and *d* of the



lever, the conditions are reversed; that is to say, tacheometer No. 115 is, as a rule, more advantageous than the ordinary instrument.

That the accuracy of distances measured with the aid of corresponding combinations of rod intervals determined with tacheometers No. 115 and No. 1, is invariably greatest in the case of the measurements made with the former may be demonstrated as follows\* :—

The errors we are liable to make under any circumstances are :—

1. Errors,  $Ec$ , of contact of the lever with each one of the butting pins,  $a$ ,  $b$ ,  $c$  and  $d$ .
2. The error,  $Ep$ , of the pointing made on the target line in the first position of the telescope, viz., say that determined by pin  $a$ .
3. The Errors,  $Er$ , in the rod readings for the other sights.

Let us consider the case of a rod observed on at a distance of 100 yards.

The error of contact may be estimated according to Porro at :  $\frac{1}{200}$  part of  $\frac{1}{1000}$  of a yard. The effect of this error is reduced in the ratio of the arms of the lever  $L$ , viz., as 8 to 1 on the ordinary instrument (No. 1) and as 10 to 1 in tacheometer No. 115; and it is amplified in the ratio of the space between the two points of suspension of the telescope, to the distance sought, viz., in the ratio of  $r$  to  $R$ , or of 0.1750 yard to 100 yards with tacheometer No. 1 and 0.2222 yard to 100 yards with No. 115. The mean error  $Ec$  on the rod caused by an error of contact between the lever and a butting pin is therefore in thousandths of a yard :

(a) With the ordinary tacheometer or No. 1 :

$$Ec_1 = \frac{1}{200} \times \frac{1}{8} \times \frac{100}{0.1750} = \frac{100}{280} = 0.357 \text{ thousandths of a yard.}$$

(b) With tacheometer No. 115 :

$$Ec_{115} = \frac{1}{200} \times \frac{1}{10} \times \frac{100}{0.2222} = \frac{100}{444.4} = 0.225 \text{ thousandths of a yard.}$$

The mean error of a pointing  $Ep$ , deduced from special experiments made by an experienced operator with a rod put up at a distance of 100 yards under ordinary conditions, appears to be about  $\frac{1}{4}$  of a thousandth of a yard.

Finally, the mean error of a reading  $Er$  made under the same conditions, may be assumed at  $\frac{1}{2}$  thousandth of a yard for tacheometer No. 1, and for No. 115 at say  $\frac{4}{10}$  of a thousandth of a yard, when the interval which separates the cross wire from the centre of the next lower target line is estimated by the eye, and at less than  $\frac{1}{4}$  thousandth when the said interval is measured with the aid of the micrometer screw, or say on an average at 0.375 of one thousandth of a yard.

That such a degree of accuracy can be attained without difficulty, appears from the following considerations.

\* See "Les tachéomètres auto-réducteurs" par E. Prévot, Conducteur des Ponts et Chaussées, Paris 1895.



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The magnifying power of the telescope being about 50, a division of one hundredth of a yard on a rod put up at a distance of 100 yards, is viewed in the telescope, in the same manner as a division  $\frac{1}{1000}$  of a yard wide with the naked eye, when about 9 inches distant. It is not hard to satisfy one's self that under such circumstances, the tenth part of a hundredth yard division and even much smaller spaces, can quite easily be estimated with the eye, and therefore that the error we are exposed to make can easily be placed at from  $\frac{1}{30}$  to  $\frac{1}{20}$  of such a division.

Mean error of a distance  $R$  of 100 yards measured by means of the relations :

$$R = \frac{\overline{ab} + \overline{ac} + \overline{ad}}{0.05} = 20 (\overline{ab} + \overline{ac} + \overline{ad}) \text{ for tacheometer No. 1, and}$$

$$R = \frac{\overline{ab} + \overline{ac} + \overline{ad}}{0.045} = 22.22 (\overline{ab} + \overline{ac} + \overline{ad}) \text{ for tacheometer No. 115.}$$


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This operation comprises 1 pointing and 3 readings and hence 4 contacts. Moreover we have to bear in mind that while the error of pointing  $Ep$  does not affect the value of the whole number selected as a starting point for measuring the rod intervals, it modifies by the same quantity  $Ep$  each one of the succeeding readings. In making the sum of the rod intervals, the error of the pointing is therefore trebled, that is to say it is increased to  $3Ep$ . According to the theory of errors, the total error  $E$  of the sum of rod intervals  $\overline{ab} + \overline{ac} + \overline{ad}$  determined at a distance of 100 yards is therefore in this case, in general:

$$E = \sqrt{(3Ep)^2 + 3(Er^2) + 4(Ec^2)}$$

Now replacing the symbols by their values in thousandths of a yard, as above established, we have for the total error of intervals determined with tacheometer No. 1:

$$E_1 = \sqrt{(3 \times 0.25)^2 + 3(0.5)^2 + 4(0.357)^2} = \sqrt{0.5625 + 0.75 + 0.5098} = \sqrt{1.8225} = 1.35$$

and for the total error of intervals determined with tacheometer No. 115:

$$\begin{aligned} E_{115} &= \sqrt{(3 \times 0.25)^2 + 3(0.4)^2 + 4(0.225)^2} = \sqrt{0.5625 + 0.48 + 0.2025} \\ &= \sqrt{1.245} = 1.115 \end{aligned}$$

The corresponding errors  $E_{R_1}$ ,  $E_{R_{115}}$  on the distances are:

$$E_{R_1} = 1.35 \times 20 = 27.00 \text{ or } 0.02700 \text{ yd. and}$$

$$E_{R_{115}} = 1.115 \times 22.22 = 24.78 \text{ or } 0.02478 \text{ yd.}$$

Mean error of a distance  $R$  of 100 yards measured by means of the relation:

$$R = \frac{\overline{ab}}{0.01} = 100 \overline{ab}, \text{ with both instruments.}$$

This measurement necessitates 1 pointing, 1 reading and hence 2 contacts, therefore:

For tacheometer No. 1 the total error  $E_1$ , of the rod interval  $\overline{ab}$  determined at a distance of 100 yards is:

$$E_1 = \sqrt{1 \times (0.25)^2 + 1 \times (0.5)^2 + 2 \times (0.357)^2} = \sqrt{0.0625 + 0.25 + 0.2549} = \sqrt{0.5674} = 0.7533.$$

and for tacheometer No. 115:

$$E_{115} = \sqrt{1 \times (0.25)^2 + 1 \times (0.4)^2 + 2 \times (0.225)^2} = \sqrt{0.0625 + 0.16 + 0.1012} = \sqrt{0.3237} = 0.5687.$$

Here the corresponding errors on the distance are:

$$E_{R_1} = 0.7533 \times 100 = 75.33 \text{ or } 0.07533 \text{ yd. and}$$

$$E_{R_{115}} = 0.5687 \times 100 = 56.87 \text{ or } 0.05687 \text{ yd.}$$

Mean error of a distance  $R$  of 100 yards measured by means of the relations:

$$R = \frac{\overline{ab} + \overline{bc} + \overline{bd}}{0.03} = \frac{100}{3} (\overline{ab} + \overline{bc} + \overline{bd}) \text{ for tacheometer No. 1 and}$$

$$R = \frac{\overline{ab} + \overline{bc} + \overline{bd}}{0.025} = \frac{100}{2.5} (\overline{ab} + \overline{bc} + \overline{bd}) \text{ for tacheometer No. 115.}$$

When carrying on levelling operations, it may be found convenient to use this relation, with the intervals counted from a single pointing made near the centre of the rod with the lever abutted against pin  $b$ .

In this case we have, therefore, as in the first, 1 pointing, 3 readings and 4 contacts; but the error of pointing,  $Ep$ , modifies the adjoining intervals  $\overline{ba}$  and  $\overline{bc}$  on each side in opposite directions, so that an error on  $\overline{ba}$  is neutralized by an equal and opposite error on  $\overline{bc}$ , and the only interval affected by  $Ep$  is  $\overline{bd}$ . Hence:

$$E = \sqrt{Ep^2 + 3(Er)^2 + 4(Ec)^2}$$

and replacing the symbols by their numerical values, we find for the total error of intervals measured with tacheometer No. 1:

$$E_1 = \sqrt{(0.25)^2 + 3(0.5)^2 + 4(0.357)^2} = \sqrt{0.0625 + 0.075 + 0.5098} = \sqrt{1.3225} = 1.15,$$

and for the total error of those measured with tacheometer No. 115:

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$$E_{115} = \sqrt{(0.25)^2 + 3(0.4)^2 + 4(0.225)^2} = \sqrt{0.0625 + 0.48 + 0.2025} = \sqrt{0.7450} = 0.863$$

Again, the corresponding errors on the distance are:

$$E_{R_1} = \frac{1.15 \times 100}{3} = 38.33 \text{ or } 0.0383 \text{ yard.}$$

$$E_{R_{115}} = 0.863 \times 100 = 86.3, \text{ or } 0.0345 \text{ yard.}$$

If instead of the intervals being determined with one pointing made while the lever is abutted against pin **b** or against **c**, two pointings are made, the error of the pointing which is used for two readings is doubled, and we have for the total error of the intervals:

$$E = \sqrt{Ep^2 + (2Ep)^2 + 3(Er)^2 + 4(Ec)^2}$$

Whence we deduce for the total error  $E_1$  of the intervals measured with tacheometer No. 1:

$$E_1 = \sqrt{(0.25)^2 + (0.50)^2 + 3(0.50)^2 + 4(0.357)^2} = \sqrt{0.0625 + 0.25 + 0.75 + 0.5098} = \sqrt{1.5723} = 1.253$$

and for the total error of those determined with tacheometer No. 115:

$$E_{115} = \sqrt{(0.25)^2 + (0.50)^2 + 3(0.40)^2 + 4(0.225)^2} = \sqrt{0.0625 + 0.48 + 0.2025} = \sqrt{0.9950} = 0.997.$$

Once more the corresponding errors on the distance are:

$$E_{R_1} = \frac{1.253 \times 100}{3} = 41.8 \text{ or } 0.0418 \text{ yard, and}$$

$$E_{R_{115}} = \frac{0.997 \times 100}{2.5} = 39.88 \text{ or } 0.0399 \text{ yard.}$$

The inventor of the "Tachéomètre auto-réducteur" has himself given the following formulas, which, he states, indicate the error we are liable to make on any distance  $R$  with the two first combinations above mentioned of rod intervals determined with the ordinary instrument (No. 1), viz.:

1st. By using the relation  $\frac{\overline{ab}}{R} = 0.01$ :

$$E_{R_1} = \frac{\text{Yard}}{0.04} + \frac{R}{4000} \dots \dots \dots (A)$$

2nd. By using the relation  $\frac{\overline{ab} + \overline{ac} + \overline{ad}}{R} = 0.05$ :

$$E_{R_{115}} = \frac{\text{Yard}}{0.02} + \frac{R}{10000} \dots \dots \dots (B)$$

By substituting 100 yards for  $R$  in equations (A) and (B) we have:

With ratio  $\frac{\overline{ab}}{R} = 0.01$ :

$$E_{R_1} = 0.062 \text{ yard.}$$

With ratio  $\frac{\overline{ab} + \overline{ac} + \overline{ad}}{R} = 0.05$ :

$$E_{R_{115}} = 0.030 \text{ yard.}$$



It may not be superfluous to repeat here that while the result of a very good steel tape measurement will be in excess from 0.03 yd. to 0.06 yd. per 100 yards, as already stated, the tacheometer measurement may indicate in very dry weather a deficiency of from 0.02 yd. to 0.03 yd. The difference of  $\left\{ (3+2) = 5 \right\}$  to  $\left\{ (6+3) = 9 \right\}$  hundredths may change sign in very cold and wet weather.

With the butting pins placed as above described, it is evident that so long as the actual difference of level between the horizontal optical axis or line of collimation of the telescope and the zero of the rod remains within the limits of the latter, or say within from 4 to 5 yards, and the distance, rod to tacheometer, does not exceed 300 yards, it is always quite possible, not to say easy, to obtain with tacheometer No. 115 a sufficient number of rod readings to determine three intervals which are either themselves contiguous, the same as the spaces intercepted with one pointing, or that will correspond to these spaces, provided we take care to have the lever butted against the proper pin, previous to finally setting the telescope truly level with the aid of the micrometer or slow motion screw and the sensitive double-faced level, for taking the horizontal fore or back sight.

As regards the distance, it may be said that it happens very seldom that the atmosphere is sufficiently clear and pure and the light as well as the ground suitable, for us to venture taking even 300-yard sights on each side of the instrument, for any length of time, and this distance may properly be considered to be the extreme limit, which should not be overstepped in carrying on geodetic levelling operations. It is only under exceptionally favourable circumstances that a few sights between 300 and 400 yards long can be taken consecutively in running lines of precise levels.

With a view of devising a rational and expeditious method of taking series of combined level and distance readings for geodetic levelling purposes, or sets of geodesic readings with tacheometer No. 115—after having levelled the horizontal limb or circle of the tacheometer by means of the three ordinary thumb levelling screws and the level tube fixed on top of the cross-bar—let us take a series of readings on a four yard rod 200 yards distant, with the long lever  $L$  successively butted against the pins  $a$ ,  $b$ ,  $c$  and  $d$ , and commencing with reading 0, while the lever is kept in place by pin  $a$ , and let us designate by  $P_R$ , the series of intersections of the pencil of visual rays determined by the pins  $a$ ,  $b$ ,  $c$ ,  $d$ , with the rod.

In such case we evidently subdivide by means of the said pencil of rays, the full height figured on the rod into three parts:  $\overline{0,2}$ ,  $\overline{2,3}$ , and  $\overline{3,4}$ , which bear to each other the same ratios as  $\overline{ab}$  to  $\overline{bc}$  to  $\overline{cd}$ , intersecting as we do. the rod with the four rays in question; at 0 at the foot; at figures 2 and 3 near the middle, and at figure 4 at the top. Now, if any one of the four rays producing the series of intersections  $P_R$  be level, it is clear that the three additional intersections and corresponding readings required for geodetic levelling purposes are secured without any special pointing being necessary, that is to say, without the clamp  $P$  and knife edge having to be moved up or down on the prismatic guide rod  $T$ .

The four positions of the pencil of rays determined by the pins  $a$ ,  $b$ ,  $c$ ,  $d$ , corresponding to position  $P_R$ , in each of which a different one of the said rays is horizontal may be termed the fundamental positions of the standard pencil of rays

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required for the purposes of precision levelling, and the level rod pointings 0, 2, 3 and 4 corresponding to these positions may be called the fundamental series of level pointings and designated by the figures (0), (2), (3) and (4), where (0) denotes a level pointing to figure 0 with the lever *L* butted against pin *a*, (2) a level pointing to figure 2 with the lever butted against pin *b*, (3) a level pointing to figure 3 with this lever butted against the pin *c*, and (4) a level pointing to figure 4 with the telescope while the lever *L* is butted against pin *d*.

For distances, tacheometer to rod, of less than 200 yards, a level pointing may strike more or less above or below its corresponding fundamental position, according as the distance differs more or less from 200 yards, without a special pointing becoming necessary for the purpose of securing the intersection whether of the upper or of the lower visual ray of the corresponding pencil *a*, *b*, *c*, *d*, with the rod. But when the said distance exceeds 200 yards, such a special pointing becomes indispensable to attain the said end, and occasionally even a second one.

Now, as the intervals  $\overline{3-4}$  and  $\overline{2-3}$  are only one-half as large as the interval  $\overline{0-2}$ , it is evidently best for us to secure, as much as practicable, the special pointings required at the lower end of the rod, which can be managed by abutting the lever against that particular pin which corresponds to the fundamental level reading next above the intersection of the horizontal line of collimation with the rod, whenever this is possible. That is to say, by butting the lever against pin *d* for all level readings between 3 and 4 yards; against pin *a* for all readings between 2 and 3 and against pin *b*, for all level readings between 1 and 2 yards.

In all cases, however, where the level reading strikes the rod between the figures 0 and 1, it will be best to start our series of readings with the lever abutted against pin *a*, for by so doing we raise the fundamental level pointing (0) less than we would have to depress the next higher pointing (2).

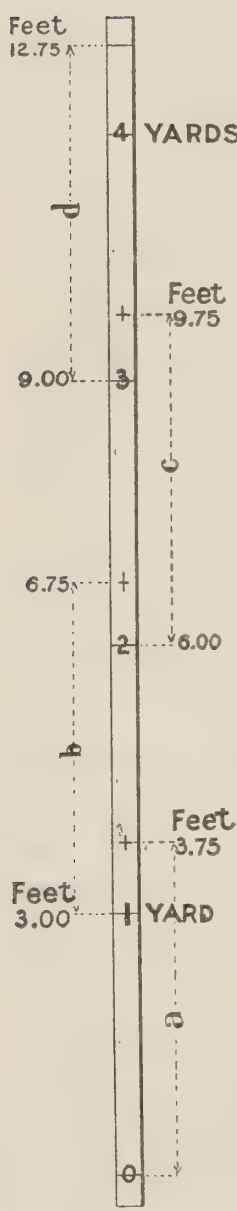
With a rod about  $4\frac{1}{4}$  yards long, such as that proposed to be used, the pins *a*, *b*, *c*, *d*, may continue to be used respectively for  $\frac{1}{4}$  yard above the figures 1, 2, 3 and 4; this extra  $\frac{1}{4}$  yard is, however, chiefly intended to cover any small error in the horizontality of the line of collimation, that may result from the provisional levelling of the instrument with the aid of the level tube *N* fixed on the cross-bar instead of the more sensitive level *O* attached to the telescope.

The subjoined table shows that by operating in the manner indicated, it is only when the distance—rod to tacheometer—exceeds 250 yards, that a second special pointing becomes indispensable to secure a complete set of four standard rod readings, and then only when the level pointing strikes the rod between figures 2 and 3.25 yards, or between 6 and 9.75 feet.

The sketch in the first column of the table given on next page shows at a glance the limits between which each one of the pins *a*, *b*, *c*, *d*, should, as a rule, be used for maintaining the telescope in a level position with the aid of the long lever, in order that the complete set of four rod readings in question may be obtained with a minimum number of pointings.



SERIES OF READINGS with fundamental level pointings (2), (3), (4), lowered one yard (3 ft.) and with the same raised  $\frac{1}{4}$  of a yard ( $\frac{3}{4}$  ft.); also with fundamental pointing (0) raised  $1\frac{1}{4}$  yards  $3\frac{3}{4}$  ft. (See sketch in margin.)



Distance Instrument to Rod.	Fundamental Level Pointings.	Extreme Readings, a, b, c, d, in Yards.	Number of Special Pointings required to secure a complete set of four Standard Readings.
100 yards..	(0) {	a = 0.000, b = 1.000, c = 1.500, d = 2.000	None.
		a = 1.250, b = 2.250, c = 2.750, d = 3.250	"
	(2) {	b = 1.000, c = 1.500, d = 2.000, a = 0.000	"
		b = 2.250, c = 2.750, d = 3.250, a = 1.250	"
200 yards..	(3) {	c = 2.000, d = 2.500, b = 1.500, a = .500	"
		c = 3.250, d = 3.750, b = 2.750, a = 1.750	"
	(4) {	d = 3.500, c = 3.000, b = 2.500, a = 1.500	"
		d = 4.250, c = 3.750, b = 3.250, a = 2.250	"
250 yards..	(0) {	a = 0.000, b = 2.000, c = 3.000, d = 4.000	None.
		a = 1.250, b = 3.250, c = 4.250	One extra pointing.
	(2) {	b = 1.000, c = 2.000, d = 3.000	One extra pointing.
		b = 2.000, a = 0.000, c = 3.250, d = 4.250	None.
300 yards..	(3) {	c = 2.000, d = 3.000, b = 1.000	One extra pointing.
		c = 3.250, b = 2.250, a = .250, d = 4.250	None.
	(4) {	d = 3.000, c = 2.000, b = 1.000	One extra pointing.
		d = 4.250, c = 3.250, b = 2.250, a = 0.250	None.
350 yards..	(0) {	a = 0.000, b = 2.500, c = 3.750	One extra pointing.
		a = 1.250, b = 3.750	"
	(2) {	b = 1.000, c = 2.250, d = 3.500	"
		b = 2.500, a = 0.000, c = 3.500	"
400 yards..	(3) {	c = 2.500, d = 3.250, b = 0.750	"
		c = 3.250, b = 2.000, a = 0.000	"
	(4) {	d = 3.000, c = 1.750, b = 0.500	"
		d = 4.250, c = 3.000, b = 1.750	"
450 yards..	(0) {	a = 0.000, b = 3.000	One extra pointing.
		a = 1.250, b = 4.250	"
	(2) {	b = 1.000, c = 2.500, d = 4.000	"
		b = 3.250, a = 0.250	"
500 yards..	(3) {	c = 2.000, d = 3.500, b = 0.500	"
		c = 3.250, b = 1.750	"
	(4) {	d = 3.000, c = 1.500, b = 0.000	Two extra pointings.
		d = 4.250, c = 2.750, b = 1.250	"
550 yards..	(0) {	a = 0.000, b = 3.000	One extra pointing.
		a = 1.250, b = 4.250	"
	(2) {	b = 1.000, c = 2.500, d = 4.000	"
		b = 3.250, a = 0.250	"
600 yards..	(3) {	c = 2.000, d = 3.500, b = 0.500	"
		c = 3.250, b = 1.750	"
	(4) {	d = 3.000, c = 1.500, b = 0.000	One extra pointing.
		d = 4.250, c = 2.750, b = 1.250	"



## THE NEW GEODESIC TACHEOMETER ROD.

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An indispensable adjunct to every tacheometer is a properly constructed and suitably divided rod. Of course any kind of levelling or telemeter rod answers, in a way, for use in connection with the “tachéomètre auto-réducteur,” some better than others, yet I know of none, which altogether satisfies, in my estimation, the requirements of an ideal tacheometer rod that can be used advantageously for ordinary engineers’ and surveyors’ field work as well as for precision levelling operations.

I therefore ventured to add a speaking levelling and measuring rod constructed in accordance with the particular views I entertain in this respect, to the already long list of such rods of various patterns which are in existence. The proposed geodesic rod, inclusive of all the accessories required for carrying on successfully tacheometric operations of all kinds is shown on illustrations Nos. II and III, which are to be found in the accompanying pocket, with details enlarged; the figures being accompanied by explanatory references.

The new rod is similar, as regards general construction, to the geodesic levelling rods **E** and **F** designed by me, which have been used exclusively for some ten years past, on the geodetic levelling operations carried on under my direction on the St. Lawrence, etc., for the Public Works Department, viz.: ever since the rods were returned to the Department from the Indian and Colonial Exhibition held at London in 1886; but instead of having a scale of feet, tenths and half-tenths with a white target line 0.008 foot wide, painted at every half tenth of a foot on a black strip on either side, like the said levelling rods, the new rod has its scale marked out in white as follows, on a black ground or strip 0.05 foot wide, painted on one side of its face, viz.:—

1st. When the foot is adopted as the unit of lineal measure, at the quarter, half, three-quarters and whole tenths of a foot, by white target lines 0.02 foot wide, connected in the centre by a white bead 0.005 foot wide; the whole and half-tenth white stripes being left the full width of the scale strip, but the quarter and three-quarter tenth lines only one-half this width. The half-tenth target lines are further distinguished from the quarter-tenth lines by black points painted at their inner ends, and the whole tenths from the quarter and half-tenths by heavy black lines run across the whole width of the space left for the figures beside the scale strip.

2nd. When the yard is adopted as the unit of length, the scale is marked out by white target lines 0.004 yards wide at each hundredth and each half a hundredth of a yard, which are connected in the centre by a white bead 0.001 yd. wide; the whole hundredth lines being left the full width of the scale strip, but the half hundredth lines only one-half this width. The direction in which the readings are increasing is moreover shown by four heavy black lines of gradually increasing lengths, put in opposite the first, second and third quarters of each tenth and at the upper end of the same.

The figures denoting the feet or yards are painted red, while those indicating the tenths are painted black and a little smaller than the former; each figure invariably having its centre opposite the centre of the corresponding division. On the rod divided into yards, the number of whole yards cut off by the cross wire above 0 is also indicated in the centre of each tenth of a yard, by a corresponding number of dots painted red.

A rod with a scale of yards and decimals has the advantage of being less charged with figures than a self-reading rod subdivided into feet, tenths and hundredths, but a rod divided into feet, such as shown on plates II and III in pocket, is perhaps better adapted, on the whole, to the requirements of the engineering profession. With a view of facilitating the precise determination of rod intervals at short range, supplementary division lines, one-half hundredth of a foot centre to centre, have been drawn in black along the whole length of the foot scale, so as to interfere as little as practicable with the clearness of the main white target lines.

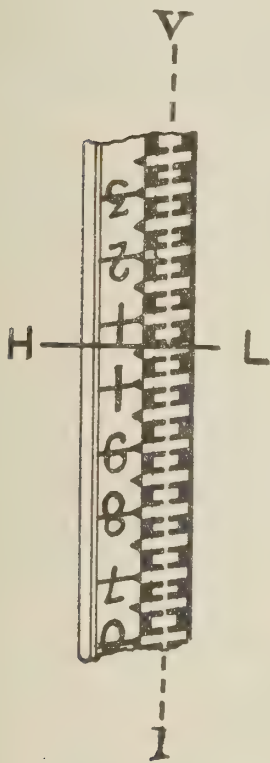
The indiscriminate use of one and the same target line or stripe or series of target lines of the same width, for very short as well as for comparatively long sights, does not appear to me to permit of the observer making uniformly accurate pointings throughout, or of the eye estimating with a uniform degree of precision the space that intervenes between the apparent line of intersection of the horizontal wire with the rod and the nearest division work of the rod scale.

In operating with the self-reading telemeter or tacheometer rods at present in use, so far as I am aware, it is apparently taken for granted that the subdivision by the eye of, say one centimeter or any other standard interval, into decimal or other aliquot parts, leads to the same relative degree of accuracy in the results whether it is effected at a distance of say 5 or 6 meters, or at 100 or 200 meters, and in all cases where no micrometer measurements are made the smallest subdivisions read off and recorded are usually either thousandths of a meter or thousandths of a foot, whether the rod is put up very close to the instrument or very far from it. Yet, it must be admitted we can, in general, no more determine the elevation of a level line of sight with the same degree of accuracy, by locating it with the eye within the limits of a centimeter division of a rod only 5 or 6 meters off, as by locating it within the same rod division, at a distance of from 100 to 200 meters—than we can lay off an angle of a given number of degrees and minutes with a 3-inch protractor as accurately as with a 3-foot circle; an error made at 5 meters is, in comparison to the distance, evidently much greater than the same error in the reading made at a 100 or 200 meters from the instrument.



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Whatever may be the kind of rod used, the readings should always be taken along the centre line or axis of the row of target stripes or other division marks, for, when the line of sight is inclined to the horizon and the face of the rod oblique to the vertical plane swept out by the axis of the telescope, the plane passing through the transverse wire and the optical axis no longer cuts the rod invariably in a direction **HL** parallel to the longitudinal axis of the target lines; but in general, obliquely thereto, as shown by the figure in the margin, and it becomes indispensable to take all the readings on one and the same vertical,  $\overline{VL}$ , if correct rod intervals are to be obtained. The bead which connects all the target stripes serves as a reminder to the observer, that the rod intervals are all intended to be measured along the axis or centre line of the row of white target lines painted on the rod.



Instead of estimating the distance between the apparent intersection of the horizontal wire with the scale on the face of the rod, and the centre of a white target line, this space can be more accurately measured with the aid of the micrometer screw; leaving the distance, tacheometer to rod, to be determined in the ordinary way; for, it is always easier to subdivide a small rectangular space correctly into equal parts, than to cut off the said space any other aliquot part, whether at one end or the other.

The new rod is well adapted for making such precise measurements at all distances at which the power of the telescope and the state of the atmosphere permit of making the said measurements. When a very long sight has to be taken, as across a river, a gully, etc., two, three or four moveable targets can be fixed at

known heights above 0 on the rod and the corresponding intervals determined on the vertical scale, or scale of tangents of the tacheometer, very accurately measured with the aid of the micrometer screw which gives directly the  $\frac{1}{1.500.000}$  part of a foot and a still smaller space by estimation, whence the rod reading corresponding to a level optical axis and the horizontal distance, rod to tacheometer, can be easily deduced, without there being any necessity for signalling to the rodman to move his target up or down.

Four standard target positions are indicated by white lines painted on, or by grooves cut into the sides and rear faces of the rod, which determine three consecutive intermediate intervals bearing to each other the ratios of the whole numbers 10, 8 and 4, which ratios are the same as those of the intervals between the pins of the "Tachéomètre Sanguet" of the ordinary construction. These lines or shallow grooves correspond with figures 0.3, 2.58, 7.14 and 12.84 feet above 0, the intervals determined by them are therefore disposed in the inverted order of those determined by the pins a, b, c, d, of the said tacheomètre (No. 1); the largest interval (10) being at the top and the smallest (4) at the foot of the rod. The ordinary series of intervals has been inverted on the rod in order to prevent it, as much as possible, from being rendered top heavy and difficult to handle during strong winds when the four targets are put on.



The same as geodesic levelling rods **E** and **F**, the new tacheometer rod consists of three battens or scantlings of mahogany  $B_1$ ,  $B_2$ ,  $B_3$ , which when put together form a continuous rod 13.02 feet or 4.34 yards long. The bottom scantling or lower face bar  $B_1$  measures 6.51 feet or 2.17 yards in length, exclusive of the ball support  $O$  of phosphor bronze, 0.10 foot or 0.03 yard high, added at the foot; it embraces the portion of the divided scale extending from 0 up to 6.36 feet or 2.1225 yards and thence down to—0.150 foot or—0.050 yard. The lower 3.900 feet or 1.300 yards, or from—0.150 foot or—0.050 yard to 3.75 feet or 1.25 yard, is square in cross section; measuring 0.15 foot or 0.05 yard by 0.15 foot or 0.05 yard—and the upper 2.610 feet or 0.8725 yard, or from 3.75 feet or 1.25 yard to 6.36 feet or 2.1225 yards, is flat and measures 0.15 foot or 0.05 yard by 0.078 foot, or 0.026 yard. The top face bar  $B_3$  is flat and measures 0.15 foot or 0.05 yard in width, 0.078 foot or 0.026 yard in thickness and 6.51 feet or 2.1675 yards in length; it embraces the portion of the scale between 6.360 feet or 2.1225 yards and 12.87 feet or 4.29 yards. The intermediate bar  $B_2$  serves to connect the upper with the lower half of the scale and measures 0.15 foot or 0.05 yard in width by 0.072 foot or 0.024 yard in thickness, by 6.51 feet or 2.17 yards in length and extends from division 3.75 feet or 1.25 yard to division 10.26 feet or 3.42 yards.

The original intention was: 1st. To make the rear bar out of the same piece of mahogany as the other bars and apply it to the back of the latter in a reversed position, so that any tendency to warping or twisting in the face bars might be checked by a probable equal and similar working of the rear bar in an opposite direction. 2nd. In order to prevent the portion of the face bar  $B_3$ , which projects 2.61 feet or 0.8725 yard above the upper end of the intermediate or connecting bar  $B_2$  from warping, this bar was to be formed of two halves (mahogany and pine) each 0.039 ft. or 0.013 yd. thick, screwed or dowelled and glued together and parafined. This plan had to be abandoned as the wood available would not stand this treatment without giving such signs of warping and twisting, that it was considered unsafe to rely on the bars remaining straight after being exposed to the weather.

Thereupon, it was decided to build up each one of the bars which are respectively 0.072 foot or 0.024 yard and 0.078 foot or 0.026 yard thick, of three battens, a piece of clear white pine  $\frac{4}{10}$  of the total thickness of a bar being interposed between two pieces of mahogany that form each  $\frac{3}{10}$  of the said thickness, and all three firmly glued together. This plan gave satisfactory results; the desired increased rigidity, of the upper 2.61 feet of the face bar  $B_3$ , which project above the connecting bar,  $B_2$  in the rear, and hence are unsupported by the same, was secured without any trace of twisting or warping being noticeable in the battens after they were glued together.

The intermediate or connecting bar  $B_2$ , is firmly secured to the face bars, by means of steel fillister head screws  $S$  with large heads screwed into circular brass socket plates  $P$ , sunk into the face bars, three to each bar; each plate being fixed to the bar by two small brass screws  $S_1$ . A groove is cut on each side of the rod to serve as a guide for sliding a target  $T$  of the ordinary construction with clamping screw  $C$ , from top to bottom along the face bars. On this target, which is made of aluminum to secure a minimum weight, a narrow stripe  $L$ , is painted in the centre

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for use when comparatively long sights are taken and wider rectangular marks *M* on either side for very long sights. The target *T* is exactly 0·50 foot or 0·17 yard long and 0·40 foot or 0·14 yard wide, out to out, and can be fixed in position so as to bring its centre exactly at any desired height above 0 by means of two metal strips *t* soldered on its reverse side with their outer faces precisely 0·20 foot or 0·07 yard on each side of the said centres. It has also a centre line painted on the back all round by means of which it can be placed closely in position at any one of the standard heights of 0·3, 2·58, 7·14 and 12·84 feet above 0 indicated on the sides and the rear of the rod, by white lines or grooves. These heavy white lines or grooves are, however, intended to serve only as guides for fixing the targets provisionally in position at the said standard elevations above the 0 of the rod; the final close adjustments of targets should in all cases be made with the aid of the metal strips *t* just described, which are better suited for the purpose.

The foot of the rod is shod with a brass shoe *H* firmly secured to the wood with three brass screws *w* extending from front to rear of shoe; the face of the shoe is cut out between the fillets so as to reduce its height to 0·140 foot or 0·046 yard, viz., to a level 0·0100 foot or 0·0020 yard below the zero point, in order that the whole of the scale above this point may be entirely painted on wood, so that the zero target line (a very important one for tacheometric measurements) may not become defaced by the accidental rubbing of branches, weeds, &c., against the brass, on the field, or when the shoe is removed from the rod for packing it in a box, which would be quite likely to happen soon, if the zero line was painted on brass at the extremity of the rod, as is often done.

The shoe carries on one side a circular level *l* mounted on parallel plates with three capstan adjusting screws *a* working against spiral springs; this level is used by the rodman in all positions in which a similar level *l* inserted in the rod about 3·5 feet or 1·17 yard above the foot and which will be presently described—cannot be seen by him—on account of being too high up or because he cannot stand in rear of his rod, or for some other reason.

One half of the number of rods used should have the circular level on the right hand side and the other half on the left hand side of the shoe, for it happens sometimes that the projecting level as fixed on one side, prevents the rod from being held up vertically, while it would not thus interfere with the proper holding of the rod if it were attached on the opposite side.

To the lower plate under the lower level *l* can be fixed, when found requisite, a gauging attachment provided with a straight or hook pointer *j*, for the accurate determination of water levels.

The pointer *j* proper is screwed into the end of a brass tube *k* with lateral openings or slits, which slides along a steel centre pin *P* and can be fixed at any desired height on the pin by means of either of two clamp screws *e*. The steel centre pin is divided lengthwise into hundredths of a foot or yard by marks cut all around it, and thousandths of a foot or of a yard can be read (and ten-thousandths of a yard estimated) by means of an index division *d* of fivehundredths of a foot or ten thousandths of a yard engraved on the sliding tube, on each side of the slits or open



ings which are cut in the said tube, to expose the divided pin to view. A small brass pin *i* screwed into the steel centre pin at its lower end, prevents the tube from sliding off altogether, should we inadvertently omit to tighten either of the clamp screws. The point *j*,—the tip of which is level with the underside of the ball support *O*, when the slide is closed up tight against the projecting head of the pin *P* and the index on the tube is opposite the 0 on the pin,—can be lowered by 0.10 foot or 0.05 yard at a time, by adding extension rods *r* provided for the purpose. The steel pin is bored out in the centre and contains a hollow spring bolt which is terminated at its upper end by a barrel shaped head that causes the three prongs into which the bolt is split to close up when forced up or down through an appropriately tapered opening turned in a steel bushing inserted in the centre of the lower parallel brass plate under the level *l*.

The ball support *O* of phosphor bronze, 0.10 foot or 0.03 yard high, already referred to, has been added to the rod for use in connection with a cast iron foot plate *F* having a cavity turned on top about 0.138 foot diameter and 0.033 foot deep, which forms part of a sphere of 0.09 ft. radius. This support is kept in place by a tapered brass pin *q* which passes through one side of the brass shoe, the wooden rod and the brass shank of the ball and is screwed at the other end into the opposite or rear side of the shoe. The pin being made with a taper, presses the shoulder of the ball tight up against the flat end of the shoe every time, without fail.

The ball is not inserted in the rod so as to be precisely in the centre between the front and rear faces of the shoe; but with its axis 0.067 foot back of the divided face. The sum of this distance and the horizontal projection of the interval between the centre of the tacheometer and the centre of the axis of revolution of the telescope, viz.,  $\frac{1}{2} r = 0.333$  foot, gives us for the constant to be added to the distance—centre of tacheometer to axis of rod—the round number 0.4 ft.

Should it be found desirable to use convex headed pins and stakes and nails for supporting the rod, instead of placing it in a spherical cavity on a cast iron foot plate, the ball support can be removed and a shank *V* with disc fitting exactly the hole in the bottom of the shoe, substituted; if preferred, truncated pyramids of hardened steel can, of course, also be inserted in the shoes to be used as supports, as practised on the United States Geological Survey.

For tacheometrical operations, in general, the use of a foot plate with a spherical cavity in connection with a corresponding ball support on the rod, is however, calculated to give the best results. For, a rod with such a support placed on the concave surface of a spherical segment must necessarily, when held up plumb, always have its longitudinal axis in one and the same vertical, so long as the plate remains undisturbed, no matter in what direction the face of the rod may have to be turned, or how many times we may have to remove it from the plate before the work is completed from a station.

The same cannot be said when a rod with a flat base is used in connection with convex headed nails or turtle back foot plates, when the rodman can barely help shifting his rod latterly more or less, at every turning point. In taking directions or measuring horizontal angles with the tacheometer, the rodman is instructed to



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place his rod with its face as nearly as possible perpendicular to the line of sight, and the vertical wire is brought in line with the axis of the rod by dividing the black points opposite the long white target stripes into two parts of equal area.

As already stated, at a point about 3·17 feet or 1·17 yard above the foot of the rod, a second circular level  $l'$  mounted on parallel plates by means of three hexagon headed adjusting screws  $X$  with spiral springs, is inserted in the rod, viz., in an opening  $W$  of rectangular section with sides and top flaired out towards the rear, so as to enable the rodman to clearly distinguish the bubble and plumb his rod without having to stoop.

A circular level in every respect similar to level  $l'$  might be inserted in the rod at a point about 1 and  $\frac{2}{3}$  feet above 0, as a substitute for the level  $l$  on the side of the shoe, in which case any precise water level required would have to be determined by means of a separate pointing apparatus or hook gauge. A circular level encased in the rod is not so liable to be deranged, than one projecting on one side; but when in the former position it is, on the whole, not so easy for the rodman to see it distinctly and compare it with the upper level. Moreover, if the two spherical levels were both inserted in the rod, we could not set it up plumb without removing every time the struts from their sockets in the rear, which is not always indispensable nor yet desirable, as for instance, when we are taking levels of the ground where it is sufficient for all purposes to read within the nearest half tenth or so of the true elevation and where a slight variation in position is of little or no consequence.

With a view of assisting the rodman in holding his rod steadily in a truly vertical position, he is provided with a double knife-shaped wooden handle  $D$ , which he can pass transversely through a slit cut in the centre of the rod at a height of about 4 feet above 0, partly in the rear or connecting bar  $B_2$  and partly in the front bar  $B_1$ .

When not in use the double or knife handle is housed lengthwise in a corresponding recess cut in the rear half of bar  $B_1$ , near the foot of the rod, viz.:—with the flat side sunk flush with the face of the bar. The recess is undercut at the lower end so as to prevent the rounded point of the knife from leaving it, when the handle end is secured in place, and permit of the latter being tilted up by pressing down the point with the thumb, when we wish to remove the knife from its recess. The upper or handle end, is prevented from falling out of the rod by means of a short spring bolt  $b$ , inserted in the side of bar  $B_1$  with its head left flush with the wood, and which passes through an eye screwed in the end of the handle, viz.:—when the spring is released after being pulled out to clear the way for the eye.

The rodman is moreover, provided for the same purpose, with a steel shod and brass tipped hardwood strut  $U$  armed with a pruning knife for cutting away branches that obstruct the view in the line of sight, which he can plant in a vertical plane directed upon the tacheometer, and thus effectually stop all oscillations of the rod to and from the latter, which are the most important to avoid.

When, with the object of securing the very highest degree of accuracy that can be attained in the determination of rod intervals and corresponding elevations and distances with the tacheometer, we are prepared to devote to the field operations

the additional attention and time needed to measure with the aid of the micrometer screw, etc., as above described, the spaces intervening between the point of intersection of the cross wire with the rod scale and the centre of the next lowest target line, it is advisable when practicable, to use two plain light strut poles some 6.6 feet long, made of steel tubing, such as  $T_1$ ,  $T_2$  on Illustrations II and III, for the purpose of keeping the rod, steadily in a vertical position, instead of placing only one wooden strut with pruning knife in the line of the tacheometer; the steel struts being planted one on each side of the said line, as may be found most convenient.

Indeed it is quite possible, not to say probable, that in this country at least, the rodman will generally find it most advantageous to use either one or two light steel tube struts like  $T$ , as may be considered most advisable, to the exclusion of the rather heavy wooden strut with pruning knife and to carry a small hatchet when required, for clearing away branches, etc.

In order to enable the rodman to carry along two such struts with ease, provision is made for securing them to the rod by means of two ring clasps fixed to its rear face, viz.:—one ( $Y_2$ ) to the brass shoe and the other ( $Y_1$ ) on top of the intermediate bar  $B_2$ , at a point  $6\frac{1}{3}$  feet above 0. When a rodman is ready to proceed from one turning point to the next, he can pass the rounded top of either strut through one of the rings of the upper clasp,  $Y_1$ , and then force the pointed end on which an annular cam  $C$  is riveted, into the corresponding socket or ring of the lower clasp,  $Y_2$ , pushing aside with the aid of the cam, one of the flat springs  $g$  fixed to the shoe of the rod, and thus effectually preventing the tube from sliding back through the clasp ring. When the tubes have again to be taken off the rod for use as struts, the rodman has only to pull them upwards with sufficient force to cause the cams to clear the springs and then remove them from the rings by pulling them downwards, slightly out of the line of the two clasps.

For safe keeping or transportation over long distances, the three bars of which each rod is built up can be disconnected by taking out the screws which hold them together, and the shoe can also be thus removed, viz., in order to permit of a set of three complete rods inclusive of shoes, ball supports, pointer tubes, six aluminum targets, six steel tube steadying struts and other accessories being snugly packed into a wooden box not exceeding  $7\frac{1}{2}$  feet in length by 0.71 feet in width and 0.65 foot in height outside; total weight of box, with rods and accessories complete 100 lbs. See figure 7, Ill. II.

When the rods have to be transported only over comparatively short distances, the bars  $B_1$ ,  $B_2$ ,  $B_3$ , can be screwed together, with the divided faces placed over each other and the lower level and the bronze ball support protected by brass caps as shown on illustrations II and III; for this purpose the screws used in mounting the rod are amply sufficient. I may observe that the rod bars while thus screwed one on top of the other, when not in use are effectually prevented from taking a slight set one way or the other. See figure 1, Ill. II.

In order that this may be easily accomplished, an enlarged oblong brass plate  $P_1$  carrying two tubes or sockets  $t_1$ ,  $t_2$  threaded with the same tap as all the other screw plates, but in opposite directions, is inserted into bar  $B_1$  near the top, in



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place of an ordinary circular plate or button, another threaded tube or plate is inserted in the same bar near its foot, viz.: between the two battens on each side of the target groove, before they are glued together, and a third supplementary threaded tube on a circular plate is inserted into bar  $B_2$  near its upper end. All these tubes are disposed so as to traverse the face bars in the space reserved, on one side of the rod, for the figures and at places where they do not disguise the latter any more than they interfere with the target stripes or line divisions. Three extra screw holes corresponding to the tubes are also bored in the rod, viz., one ( $h_1, h_2$ ) at each end of the bar  $B_3$ , and one ( $h_3$ ), near the top of bar  $B_2$ . Moreover, in order that the upper clasp  $Y_1$  may be of service for keeping the steel tubes  $T_1, T_2$  in position on the back of the rod, as well, when it is put up for transportation, as when it is mounted for operating in the field,—instead of being fixed directly to bar  $B_2$ , this clasp is screwed on the top of a thin brass band about  $\frac{3}{4}$ -inch wide, passing over the top or rear face and sides of this bar. In the centre of the band a tube is brazed to its underside, which is imbedded in bar  $B_2$  right down to the brass plate in bar  $B_1$  affording a passage to the screw which connects intermediate bar  $B_2$  with front bar  $B_1$ , and the ends of the band rest on bar  $B_1$  and are turned in sufficiently, to butt against the bottom of the groove in the side of the rod along which the aluminum target slides up and down, so that when bar  $B_2$  is removed the band with clasp is still properly supported and effectually prevented from turning round.

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I will now place before the Department a few typical pages of a proposed field book with columns disposed so that the book may be of service, not only for registering geodetic levelling operations; but also all other kinds of engineers' and surveyors' field work carried on exclusively with the tacheometer and accompanying rod.

In these five double pages (See illustrations Nos. 46, 47, 48, 49 and 50 in accompanying pocket) I made all the entries that could be required in carrying on a series of supposed field operations, in black; the office work generally in red, and the mental computations in green, with a view of showing in a practical manner the work to be done by using the self-reducing Sanguet tacheometer, generally, for surveying and levelling operations, as a substitute as well for the chain, as for the transit or theodolite and the spirit level. The field operations and computations indicated are typical of those required in running simultaneously two lines of geodesic levels in cases where accuracy in the horizontal distances, is deemed to be as great a desideratum as precision in the elevations.

It will be seen that in column 1. we enter:—

1. The nature of the sight, whether it is a fore, back or intermediate sight taken for levelling purposes alone or for levelling and surveying purposes combined, or simply a sight taken for establishing the position of a survey point. The word sight is printed and we have only to prefix the proper qualifying adjective as required.



2. The number of the station occupied with the tacheometer, viz., after the printed words "From St."

3. The distinguishing letter of the particular rod used, viz., after the printed words "To Rod."

4. The point or station at which the rod is put up.

5. The series of continuous levellings to which the sight belongs, if deemed necessary.

Columns 2 and 3 are required for entering:—

1. Rod readings in feet  $A, B, C, D$ , which are obtained with the long lever successively abutted against pins  $a, b, c, d$ .

2. Vertical scale readings in decimals of radius  $r = \frac{2}{3}$  foot, of vertical circle described from a point on the axis of rotation of telescope near the optical axis tangent to the path followed by the knife edge, viz., readings  $(a), (b), (c), (d)$  and  $(0), (1), (2), (3), \dots, (n)$ , which we obtain either by sightings sliding targets fixed at the standard elevations of 0.3, 2.58, 7.14 and 12.84 feet above 0, which are indicated by special marks on the rod, or by directing the line of sight to such targets fixed at any other elevations that might be found more suitable in particular situations, such as 1, 2, 3, 4,  $\dots, N$ , feet above 0 of rod.

In column 4 are to be entered:—

1. Rod intervals  $\Delta$  in feet determined by readings  $A, B, C, D$ , such as  $\overline{AB}, \overline{AC}, \overline{AD}; \overline{BA}, \overline{BC}, \overline{BD}$ , etc., with the long lever arm abutted against pins  $a, b, c, d$ .

2. Scale intervals  $\delta$ , in decimals of radius  $r = \frac{2}{3}$  foot, which are determined either by scale readings  $(a), (b), (c), (d)$ , obtained by directing the line of sight successively to sliding targets fixed at the standard elevations of: 0.3, 2.58, 7.14 and 12.84 feet above 0 of the rod or to the target lines at the said elevations—or which are determined by scale readings  $(1), (2), (3), (4), \dots, (n)$ , corresponding to sights taken to sliding targets fixed at any suitable elevations above 0, such as 1, 2, 3, 4,  $\dots, N$  feet.

3. The sum  $\Sigma\Delta$ , of the rod intervals  $\Delta$  just described, which are determined in each case, viz.: in feet.

4. The sum  $\Sigma\delta$ , of the scale intervals  $\delta$ , which are determined as just stated, viz.: in decimals of radius  $r = \frac{2}{3}$  foot.

Column 5 contains:—

1. The collimation or height of the optical axis of the tacheometer above datum, which is represented by  $C$ . In each one of the series of continuous levellings,  $A, B$ , of a double rodged line the collimation is equal to the sum of the backsight and the elevation of the zero point of the rod; but for intermediate sights, the height of the optical axis of the instrument is assumed to be equal to the mean value of the two sets of collimations of the continuous series of levellings, such as:  $\frac{1}{2} (11.05562 + 11.04760) = 11.05061$  on field book page 49 in accompanying pocket.

2. The rise or fall  $I_0$  to the zero of the rod from the transverse axis of the telescope, viz:  $I_0 = R \{ (n) - c \} - N$ , where  $(n)$  denotes the scale reading cor-

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responding to the lowest sliding target or target line observed on, viz:—at  $N$  feet above 0, and  $c$  is a constant having a value in the immediate vicinity of 0.5, such as 0.49925, the value assumed for the set of typical field operations submitted, which represents the precise scale reading when the optical axis is in a truly horizontal position.

3. The elevation of the zero point of the rod, viz.:  $E_0 = C - R \{ (n) - c \}$ , in which relation the symbols have the same meaning as above.

4. The radius  $R$  of the vertical circle passing through the optical axis and having its centre on the axis of revolution of the telescope and its circumference tangent to the rod directrix along which the scale divisions are laid off, or to this line produced.

$$\begin{aligned}
 R &= 100 \overline{AB} = 200 \overline{BC} = 200 \overline{CD} = 100 \overline{BD} = 4 \left\{ \overline{BA} + \overline{BC} + \overline{BD} \right\} \times 10 = \\
 &= 2 (\overline{AB} + \overline{AC} + \overline{AD}) \times \left\{ 10 + 1 + 0.1 + 0.01 + \dots \right\} = \\
 \frac{5.7}{\overline{ba}} &= \frac{4.56}{\overline{bc}} = \frac{2.28}{\overline{cd}} = \frac{12.54}{\overline{ad}} = \frac{6.84}{\overline{bd}} = \frac{17.10}{\overline{ba} + \overline{bc} + \overline{bd}} = \frac{28.50}{\overline{ab} + \overline{ac} + \overline{ad}}
 \end{aligned}$$

In column 6, the readings of the three verniers,  $A, B, C$ , which give the directions of the survey lines, are entered.

The actual direction of a line is indicated by vernier  $C$  in degrees, minutes and half minutes. Vernier  $A$  gives the correct number of degrees, less  $180^\circ$ , plus  $\frac{2}{5}$  of the total number of minutes indicated by vernier  $C$ , and vernier  $B$  indicates the same number of degrees as vernier  $A$  plus  $15^\circ$  and the remaining  $\frac{3}{5}$  of the total number of minutes. So that: 1. The sum of the minutes read with  $A$  and  $B$  must always be equal to the minutes read with  $C$ . 2. The degrees read with  $B$  must be equal to the degrees indicated by  $C$  less  $180^\circ$  and to the degrees read with  $B$  less  $15^\circ$ . If these relations do not obtain, it is a sign that an error has been made; any one erroneous reading, taken with either of the verniers, can always be corrected by means of the other two readings.

Column 7 is reserved for notes relative to state of weather, description of points, water surfaces, &c.

In column 8 sketches are drawn showing the features of the country traversed, the lines run and levelled, &c. The computations of heights and distances, which have to be measured with the aid of micrometer scale intervals corresponding to known rod intervals, are also made in this column, as well as any other arithmetical operations that may be found necessary.

As already stated, the standard target positions marked on the rod are at: 0.3, 2.58, 7.14 and 12.84 feet above 0 and determine consecutive intervals of 2.28, 4.56 and 5.7 feet, which bear to each other the same ratios as the intervals  $\overline{ab}$ ,  $\overline{bc}$  and  $\overline{cd}$  between the pins  $a, b, c, d$ , of the ordinary tacheometer, pattern No. 1, viz., the ratios of the whole numbers, 4, 8 and 10. These intervals have been selected because they are found to be, on the whole, perhaps better adapted for making accurate distance measurements, independently of levelling than any other.



In view of the fact that as shown above, by using the "Tachéomètre auto-réducteur": 1. No corrections are required owing to any want of parallelism of the optical axis to the horizon indicated by the sensitive telescope level, whatever may be the distance, rod to tacheometer, provided we use the mean of two readings, one of which is taken with the telescope in the erect position and the level in the direct one, and the other with the telescope in the inverted position with the level reversed. 2. Horizontal distances can be measured with extreme facility, within the error limits of 0.06 foot and 0.12 foot per 100 feet, respectively, by taking advantage of the relations:  $R = \frac{\overline{ab}}{0.01} = 100 \overline{ab}$  and  $R = \frac{\overline{bc}}{0.005} = 200 \overline{bc}$ , it is clear:

(a.) That in any case only corrections for curvature and refraction need be applied, and these only when the difference between the fore and back sights exceeds say 3 or 4 feet.

(b.) That when the computations of such corrections by means of the automatically determined horizontal distances, tacheometer to rod, have to be made only for such small distances as the differences in length between fore and back sights approximately equalized by pacing with the aid of a passometer—preferably one with stem attachment for setting the needles to zero at will—they become extremely easy and simple, in fact so simple, that the results sought can readily be deduced from an attentive inspection of the factors involved and entered at once in the level book without any figuring whatsoever being requisite. For, in such case, the corrections in question may be calculated mentally with more than sufficient accuracy for all purposes, at the uniform rate of 0.000002 foot of rod interval per foot of horizontal distance, as shown in green on the sample pages of the proposed tacheometer book.

Now an approximation to equality in the lengths of the fore and back sights quite sufficient for the purpose intended can, as a rule, be readily secured, by leaving the disposition of the rod stations, as just explained, entirely in the rodmen's hands, without there being any absolute necessity for the whole staff to lose a portion of their time in endeavouring to more closely equalize the intervals between the rod and the instrument by means of stadia measurements, than can be done by the rodmen left to themselves: a ceremony which must often prove much more tedious to the observer than he anticipates, chiefly on account of his signals to the rodmen to move their rods being wrongly interpreted by them, for want of attention on their part, or for other reasons.

The ordinary corrections for curvature, refraction, inclination, &c., which according to the geodesic methods now followed, have to be applied to all readings without exception, will thus be required only in special cases, viz.: when the rough ground or other difficulties encountered, absolutely preclude the practical equalization of the back and fore sights or the reading of the rod scale without the use of the sliding targets, or would cause unwarranted loss of time and a corresponding increase in the expense.

In order that precision levelling operations may be carried on expeditiously and economically in the manner proposed, it appears desirable that at least three intelligent and attentive rodmen be employed.



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On a double rodded line the distance between two consecutive fore sight and two consecutive backsight points may be taken at from 10 to 25 paces. As regards the proper distance to be left between an instrument station and an adjoining fore or back sight point, that depends largely on the configuration of the ground, the state of the atmosphere, the power of the telescope, &c., but as already stated, it should not exceed 300 paces when a tacheometer such as No. 115 is used, and in general should be much less.

The first sight indicated on the typical pages of the proposed field book is one taken from station 49 to rod **E** at station 48. After levelling the tacheometer and setting vernier *C* on the direction taken from station 48 to station 49, increased by 180 degrees, viz.: on  $72^{\circ} + 25\frac{1}{2}' + 180^{\circ} = 252^{\circ} + 25\frac{1}{2}'$ , the telescope is directed to station 48 by the observer, who clamps both parallel plates and completes the adjustment of the line of sight in the direction of the rod with the lower tangent screw *R'*. As the distance appears to him to exceed 1,000 feet, he measures it with the long lever abutted against peg **b**, making a pointing on the 0 of the rod which the recorder enters in column 2; the stations 49 and 48, and the rod, **E**, having been previously entered by him in column 1 and a sketch made in column 8 showing the proposed operations from station 49. The observer now draws the lever lightly sideways, so as to make it clear pin **b** and cause it to strike pin **c**, when he takes the rod reading 6.962 which the recorder enters in column 3. Finally verniers *A*, *B*, *C*, are read and the directions entered in column 6, viz.:  $72^{\circ} + 10'$ ,  $87^{\circ} + 15'$  and  $252^{\circ} + 25\frac{1}{2}'$ . That vernier *C* was correctly set is shown by the fact that we have:

$$87^{\circ} - (252^{\circ} - 180^{\circ} - 72^{\circ}) = 15^{\circ} \text{ and } 10 + 15 = 25 \text{ minutes.}$$

As this sight is taken chiefly with a view of fixing the directions to be taken from station 49, in reference to those taken from station 48, it is considered sufficient to measure this distance with one rod interval, viz.:—the interval  $\overline{BC}$  determined by two readings *B* and *C* made with the lever *L* abutted against pins **b** and **c**. In such case, as we have seen, it suffices to multiply the difference between readings *B* and *C*, viz.: 6.962, by 200 in order to obtain the radius *R*. This gives us 1392.4 feet for *R* which number is entered in column 5, and the sum of the readings, which is here 6.962—there being only one reading made—is put down in column 4.

The second sight taken is a back sight from station 49 to Rod **E** put up at point No. 9, which particulars are, as before, entered in column 1 by the recorder. The observer having found by trial that when the axis of the telescope is nearly horizontal, the line of collimation intersects the rod near the foot, the lever is abutted against pin **a** and the telescope again levelled, viz., with the aid of the micrometer screw, when reading *A* = 0.539 is taken and entered in column 2. The telescope is now inverted and the double faced level reversed, by causing the journals of the transverse axis of the telescope to change wyes, and the steel straight edges fixed to the sides of the telescope near its eye end, one of which always rests on the knife edge, to exchange places simultaneously.

The errors of collimation and of inclination of level to optical axis being thus balanced, a second rod reading (0.541) is taken with the lever abutted against pin **a**, which is entered immediately under the first (0.539) by the recorder. Subse-

quently we take reading  $B = 7.326$  with the lever resting against **b** and enter it in column 3. As  $(7.326 - 0.541) \times 2$  would evidently strike above the upper end of the rod, the observer now makes a new pointing on say 5.000 with the lever remaining against **b** which is entered in column 2, and he afterwards completes the set of four readings by passing the lever successively to pins **c** and **d** and taking the corresponding readings, viz.:  $C = 8.3925$  and  $D = 11.785$  which are entered in column 3 by the recorder.

The third sight taken is a foresight from station 49 on rod **F** at point 10. As before, after having found out by trial that the horizontal optical axis will strike the rod a little below figure 5, the lever is butted against pin **b**, and the telescope set perfectly level with the aid of the micrometer screw—when the two readings  $B = 4.876$  and  $B = 4.873$  are taken consecutively with the telescope and level respectively in the erect and inverted and in the direct and reversed positions; also readings  $C = 8.383$  and  $D = 11.902$  with the lever successively held in position by pins **c** and **d**. As 11.9 less 4.8 is equal to 7.1, it is evident that a new pointing  $B$  is necessary for taking reading  $A$ . The lever is therefore returned to pin **b**, the intersection of the cross wires directed to figure 9.000 on rod which pointing ( $B$ ) is entered in column 2, and the lever handle lowered so as to strike pin **a**, when reading  $A = 1.974$  is taken and recorded.

Next in order comes another foresight, viz.: that from station 49 to rod **F** at point 11, when a similar set of operations is performed; this time beginning with direct and reversed level readings:  $D = 11.826$  and  $D = 11.830$  and ending with reading  $A = 1.494$ ; an extra pointing  $B = 8.000$  having had to be made.

The last of the set of four sights required from station 49 for precision levelling and distance measuring or general surveying purposes, is a back sight on rod **E** at point 8. In this case it is found that it is best to take the direct and reversed level readings with the lever arrested by pin **c**, viz.:  $C = 9.156$  and  $C = 9.160$ , so that one pointing may suffice for the whole set of four.

If it is important that the correct positions of the levelling turning points be established, points Nos. 8, 9, 10 and 11 have again to be sighted, for the purpose of registering the directions indicated by the verniers, as shown in column 6.

Sights are now taken to rod **F** at station 50 and to rod **G** at points  $9\frac{1}{4}$  and  $9\frac{1}{2}$  and the directions of those points duly noted. A single rod interval is deemed to be sufficient for the determination of each one of the points last named, which are specially described in the column headed "Notes, etc.", The interval read is that  $\overline{AB}$ , which affords  $\frac{1}{100}$  part of the distance  $R$ .

From station 50 the first sight is again taken to the station last occupied, viz.: 49, for the purpose of setting the tacheometer right in reference to the meridian or axis of ordinates fixed upon at the start, and also for verifying the distance between the said stations as measured from station 49; the upper limb or interior circle having previously been clamped with vernier  $C$  set at the figure read from station 49—when the telescope was pointed in the opposite direction—increased by 180 degrees, or at  $243^\circ + 11'$ .



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The back and foresights from station 50 are also taken and recorded in a similar manner as from station 49; but the intermediate sights to points Nos. 14, 15, 16 and 17 have to be treated somewhat differently from the intermediate sights taken to station 50 and to points  $9\frac{1}{4}$  and  $9\frac{1}{2}$  from station 49.

Point 14 is too high up to be levelled to in one sight, hence the inclination has to be measured by means of the scale of tangents and the micrometer screw, the horizontal distance has however been determined in the most expeditious manner possible, viz. by using the relation  $R = 100 \times \overline{AB} = 100 \times 8.543 = 854.3$  feet.

Here by pointing the optical axis to the 0 at the foot of the rod, the scale reading: 0.39752 obtains. But when the telescope is truly horizontal the scale reads: 0.49925, hence the tangent of the inclination from the instrument to 0 is  $.39752 - .49925 = 0.10173$  and the rise to 0  $= 854.3 \times (0.10713) = 86.9079$  feet, which being deducted from the collimation 11.0506 gives 97.9585 feet for the elevation of 0 at point 14. Again, point 15 is too far off to permit of a rod being used without a sliding target and the same remark applies to point 16. We therefore take in the case of point 15, the scale readings (*a*), (*b*), (*c*), (*d*) determined by the sliding targets *A*, *B*, *C*, *D* fixed at figures 12.84, 7.14, 2.58 and 0.30 feet on the rod, and perform in column 8 the numerical operations required to deduce the distance from the relation  $R = \frac{\overline{AB} + \overline{AC} + \overline{AD}}{(\overline{ab} + \overline{ac} + \overline{ad})}$  which represents in this instance:  $\frac{28.50}{0.01729} = 1648.35$  feet.

The elevation of point 15 is arrived at by multiplying the tangent of the angle made by the optical axis when directed down to the target fixed at 0.3 above the zero on the rod, with a truly horizontal line, viz.:  $(0.50352 - 0.49925 = 0.00427)$  by the distance 1648.35. This gives us 7.03845 which number plus 0.3 viz.: 7.33845 ft. must be deducted from the collimation to obtain the elevation: 3.71216 ft. of the zero point of the rod at survey point No. 15.

When the point of which we desire to establish the position and elevation is one of only secondary importance, such as for instance No. 16, it is sufficient to make two scale readings, viz.: (*d*)  $= 0.50146$  and (*a*)  $= 0.49518$ , when the relation:  $R = \frac{\overline{AD}}{\overline{ad}} = \frac{12.54}{.00628}$  gives us the distance:  $R = 1996.81$ .

In this case the elevation of the zero point is equal to:  $11.05050 - [(0.50146 - 0.49925 = 0.00221) \times (1996.81) = 4.41295] - 0.3 = 6.33755$  ft., the whole of which is worked out in detail in column 8, where the figures can be easily turned to for verification, if found necessary.

So far, no correction for curvature and refraction was applied, it being assumed that the elevations arrived at proved sufficiently accurate for all purposes.

When, however, we desire to determine correctly the elevation of a water surface, such as that of the brook at point 17, or the height of some other important point from a station on the continuous double line of levels, it becomes necessary to take the effects of the earth's curvature and the refraction of the atmosphere, into consideration, and to apply corrections accordingly.



The readings *A* and *B* on rod *F* at point 17 easily give us the distance between station 50 and point 17, which is equal to  $100 (B-A) + 0.4 = 590.5$ ; also the uncorrected elevation of the zero which is found to be equal to:

$$11.05061 - \frac{(6.912 + 6.906)}{2} = 4.14161$$

where as already shown, 6.912 and 6.906 represent the rod readings in the erect and inverted positions of the telescope and the direct and reversed positions of the level, viz.: when the line of sight is very nearly horizontal in each case.

As detailed in column 8—the mean length of the back sights whence collimation 11.0505 was deduced is equal to 939.60 feet—and the corresponding correction required to determine the effects of curvature and refraction is 0.01855 while the correction needed in the case of the foresight of 590 feet is only 0.00731, the difference to be applied to the 0 being thus 0.01124, which when deducted from the uncorrected elevation 4.14161 gives: 4.13037 for the correct elevation of the zero of rod *F*. Finally, in order to arrive at the elevation of the water surface, we have further to subtract from 4.13037 the height of the 0 above the water. This height is equal to 0.25 foot, the height of the index or 0 of the pointer scale, (which is at the same level as the zero of the rod) above the underside of the ball support—plus the reading 0.114 foot afforded by the index of the said scale, when the point touches the water—or in all 0.364 foot. A small table of corrections required for curvature and refraction at every 100 feet, up to say 1200 feet or more, printed in each field book, will prove very convenient in this connection, for use in the office or on the ground.

Now, if we had decided to follow for the fore and back sights the still more accurate, although somewhat longer method of determining the elevations above referred to, which consists in measuring with the aid of the micrometer screw and vertical scale the distance *i* between the apparent intersection of the horizontal wire, (or line engraved on the field glass of the eye piece) with the rod scale and the next lowest whole hundredth foot division, instead of estimating the said interval with the eye—we would have to take four micrometer readings, in addition to the rod readings, as shown in the case of the back sight from station 49 to point 8, and compute the thousandths, and ten and hundred-thousandths to be added to the feet, tenths and hundredths entered in column 2, page 47 of tacheometer book. The first micrometer reading (28.0) entered in column 2, page 47, shows the position of the micrometer drum, with the telescope in the erect and the double faced level in the direct position with bubble in centre of glass tube. The second reading (31.0) indicates the position of the micrometer head for a pointing made with the telescope and level in the same relative positions on the whole hundredth of a foot next below the horizontal sight first taken. The third reading (17.2) shows the position of the micrometer head for a pointing made to the same whole hundredth division with the telescope inverted, and the level reversed and the fourth reading (22.0) shows the position of the micrometer head with the telescope inverted and the level reversed.

The micrometer reading corresponding to the mean horizontal pointing is, in the case under consideration, equal to:  $\frac{28.0 + 22.0}{2} = 25,$

## Department of Public Works.

and the mean micrometer reading corresponding to the pointing on the next lowest whole hundredth division to:  $\frac{31.0 + 17.2}{2} = 24.1$ .

Hence, considering: 1st. That, as already explained, the pitch of the micrometer screw is such that by turning its head right or left over one division the prismatic guide rod with knife support is moved up or down through a space equal to the  $\frac{1}{100.000}$  part of the radius  $r = 1$ , of a circle drawn from a point on the axis of rotation of the telescope as a centre in a plane perpendicular to the said axis so as to be tangent to the plane followed by the knife edge. 2nd. That the interval intercepted on the vertical scale by any two lines of sight bears to the interval intercepted on the rod between the same lines, the ratio of ( $r = 1$ ), to  $R$ —the horizontal distance from the said axis of rotation to the rod—we have in the present case for the interval  $i$  between the intersection of the truly horizontal line of sight with the rod and the hundredth division at 9.15 pointed to from station 49:

$$i = \frac{(25 - 24.1 = 0.9) \times R}{100.000} = \frac{0.9 \times 605.24}{100.000} = 0.005447.$$

This space  $i$  when added to 9.15 gives for the precise reading of the back sight from station 49 to point No. 8: 9.155447 feet, in place of 9.158 feet the mean of the two heights estimated by the eye, and for the precise collimation from station 49 of series of levels  $B$ : 12.264477 feet instead of 12.26763 feet.

It would be interesting to know how a line of levels  $A$  25 miles long or more, run entirely according to the method just described, would compare with a line  $B$  run simultaneously with the rod intervals  $i$  all estimated by the eye. It is my intention to establish such a comparison at the first opportunity that will present itself.

In the case of a single rodded line of precision levels, it is advisable, although not indispensable, not to remove the tacheometer from a station until the recorder has entered three distinct rod intervals in column 4, and satisfied himself, by comparing them rapidly with each other or with their sum or with their mean, that no material error has been committed; the remaining entries in columns 4 and 5 can be made in the office. When, however, the line of precise levels is double rodded, such as that indicated in the typical pages of field notes given above, this verification of readings on the spot can be made in a more simple manner and the field work correspondingly expedited, viz.: by comparing the difference between the two back sight readings taken from the station occupied with the difference between the two corresponding foresight readings taken from the previous station. For instance, before leaving station 50 we would compare the difference between the back sight readings to points 11 and 10, or  $10.612 - 3.657 = 6.955$  feet with the difference:  $11.830 - 4.876 = 6.954$  feet, between the corresponding foresight readings taken on the same points from station 49, and finding the two to agree within 0.001 foot, would conclude that all the operations have been correctly performed.

Furthermore, when such a double rodded line of levels is run exclusively with a view of establishing permanent bench marks and determining the precise elevations of the same in reference to the mean sea level or some other datum plane, together with perhaps some important water or railway levels in a part of the country of



which the topography is well known and correctly indicated on existing maps, and where therefore, accurate measurements of distances and angles with the tachometer for locating the line or for any other similar purpose, would be superfluous, the ordinary run of field operations required from any of the tachometer stations—such as Nos. 49 and 50 of the supposed operations recorded above on sample pages 46 to 49 of the proposed field book—can be limited to those entered on sample double field book pages 5 and 6 to be found in the pocket which accompanies this Memo. On these two double pages, the observations, entries and computations which have to be made on the ground are, as heretofore, indicated in black, they are moreover numbered in blue in the order in which they should be taken, the office work required also is shown, viz. in red, and the mental calculations in green, as before.

From the indications given on sample double pages 5 and 6 in accompanying pocket just referred to, it will be seen that the rod readings from each station, sixteen in number, are to be taken in the following manner; the lever being invariably supposed to be abutted against that particular pin of the series a, b, c, d, which permits of the greatest number of standard readings determined by these pins being made without changing the position of the clamp on the prismatic guide rod, according to the directions given above to that effect, viz.:—

(a) *With the telescope in the erect position—milled head of the slide pinion on top—and the attached double faced level in the direct position, or on the right hand side looking towards the objective:—*

(1) A level foresight pointing (1,686). See Ill. numbered 5-B, in pocket together with an adjacent distance reading (11·310) on the rod furthest ahead of the station occupied (50).

(2) A level backsight pointing (10·617) and a distance reading (0·850) on the furthest rod in the rear.

(3) A level foresight pointing (8·534) and a distance reading (12·827) on the nearest rod ahead.

(4) A level backsight pointing (3·663) together with a distance reading (8·181) on the nearest rod in the rear of the tachometer station.

(b) *With the the telescope in the inverted position—milled head of the rack pinion which works the slide underneath the tube—and the attached chambered level in the reverse position, or on the left hand side:—*

(5) A level foresight pointing (8·531) together with an adjacent distance reading (12·827) on the nearest rod ahead.

(6) A level backsight pointing (3·657) and a distance reading (12·687) on the nearest rod in the rear.

(7) A level foresight pointing (1·683) and a distance reading (11·307) on the furthest rod ahead.

(8) A level backsight pointing (10·612) and a distance reading (5·730) on the furthest rod in the rear of the station occupied.



## Department of Public Works.

Here all the pointings are checked simply by repeating them and the same may be said of some of the distance readings. But all such repetitions are made at sufficiently long intervals of time, to become virtually fresh determinations of practically the same elevations and corresponding rod spaces, for, under ordinary circumstances neither the diaphragm nor the level of the telescope is ever sensibly disturbed during the short time spent between two consecutive stations. Besides, by comparing the difference (6·955) in the elevation between the two backsight level readings taken from any station (50), with the difference (6·954) which obtained between the two corresponding level foresight readings from the preceding station (49) as proposed, we cannot fail to detect at once any notable change in the discrepancy in readings caused by a defective collimation or an imperfectly adjusted telescope level, and hence can make a proper allowance for the same, or proceed to rectify the adjustment on the spot as may be found most desirable.

The method of carrying on geodetic levelling operations with the "Sanguet Tacheometer" and the new rod just described, will prove much more expeditious than that generally followed by the United States Coast and Geodetic Survey with the geodesic pivot level and their rod with chain target and the similar method adhered to by me for some fifteen years past, in the running lines of precision levels along the Richelieu, the St. Lawrence, &c. With the new method, the number of entries to be made in the field book becomes reduced by about one-half and nearly all the ordinary, somewhat bulky, computations are dispensed with, without the precision and reliability claimed for the present geodesic methods being in any way lessened. I believe, on the contrary, that more precise results are likely to be secured and at less expense.

R. STECKEL,  
*Engineer in charge, Canadian Geodetic Levelling.*



DOMINION OF CANADA

ANNUAL REPORT

OF THE

DEPARTMENT OF RAILWAYS AND CANALS

FOR THE FISCAL YEAR

FROM 1ST JULY, 1897, TO 30TH JUNE, 1898

SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF THE REVISED STATUTES  
OF CANADA, CHAPTER 37, SECTION 28

*PRINTED BY ORDER OF PARLIAMENT*



OTTAWA

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EXCELLENT MAJESTY

1899

[No. 10 —1899.]





# Department of Railways and Canals.

*To His Excellency the Right Honourable The Earl of Minto, G. C. M. G.,  
    &c., &c., &c., Governor General of Canada, &c., &c., &c.*

MAY IT PLEASE YOUR EXCELLENCY :

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of Railway and Canals, of the Dominion of Canada, for the past fiscal year, from the 1st of July, 1897, to the 30th of June, 1898.

All of which is respectfully submitted.

ANDREW G. BLAIR,  
*Minister of Railways and Canals.*

OTTAWA, 15th March, 1899.





# Department of Railways and Canals.

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# Department of Railways and Canals.

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# Department of Railways and Canals.

## REPORT OF THE DEPUTY MINISTER.

To the Honourable

ANDREW G. BLAIR,

Minister of Railways and Canals.

SIR,—I have the honour to submit the annual report of the Department of Railways and Canals for the fiscal year ended on the 30th of June, 1898.

The annual reports of the engineers, together with general and special reports from superintendents, both of railways and canals, and from other officers of the department, are given in appendices.

Attached hereto (Part No. II.) will be found statements showing the amounts expended during the past fiscal year in construction, repairs, and maintenance of the several works under the department; also statements showing total expenditure on each canal since its construction, on each of the Government railways, and on the Canadian Pacific Railway so far as the Government is concerned; also a statement showing the payments made, year by year, to subsidized railways, with the aggregates of such payments.

### RAILWAYS.

The present report deals with those railways of the Dominion directly controlled by the Federal Government, and others towards the construction of which subsidies have been authorized.\*

In an appendix (Part VI.) will be found a special statistical report, embodying returns for the fiscal year ended on the 30th June, 1898, made by Canadian railway companies, as required by statute. This report gives information as to railroad operations in Canada, including the Government roads.

The general facts gathered from the compilation will be of interest.

The number of railways in actual operation, including the two Government roads, the Intercolonial and the Prince Edward Island Railways, was 146: some of these, however, are amalgamated or leased; making the total number of controlling companies 84, not including the Government railways. The number of companies absorbed by amalgamation is 34, and the number of leased lines is 33.

The number of miles of completed railway was 16,870, an increase of 183 miles, besides 2,248 miles of sidings. The number of miles laid with steel rails was 16,622, of which 553 miles was double track. The number of miles in operation was 16,718.

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\*It should be observed that while the usual reports furnished by the superintending officers, and to be found in the appendices hereto, deal with the fiscal year only, the report of the Chief Engineer of the Department covers works of construction up to the 1st of December, 1898.



The paid-up capital amounted to \$941,297,037, an increase of \$19,439,805. The gross earnings amounted to \$59,715,105, an increase of \$7,361,829, and the working expenses aggregated \$39,137,549, an increase of \$3,968,884 compared with those of the previous year, leaving the net earnings \$20,577,556, an increase of \$3,392,945. The number of passengers carried was 18,444,049, an increase of 2,272,711, and the freight traffic amounted to 28,785,903 tons, an increase of 3,485,572 tons. The total number of miles run by trains was 50,658,283, an increase of 4,977,432. The accident returns show 5 passengers killed.

The Government expenditure on railways prior to and since the date of Confederation (1867) amounts, on capital account, to \$123,551,091.77 (including a payment of \$25,000,000 to the Canadian Pacific Railway Co.) and for railway subsidies charged against the Consolidated Fund the further sum of \$17,619,222.11, making a total expenditure of \$140,834,731.29. In addition, there has been an expenditure since confederation, for working expenses of \$73,029,631.74, covering the maintenance and operation of the Government roads, or a grand total of \$213,863,363.03,\* all of which, with the exception of \$13,881,460.65, has been expended on railways during the past thirty-one years. The revenue derived from the Government roads during the same period amounts to \$64,510,650.18.

#### CANADIAN PACIFIC RAILWAY.†

Of the total amount, \$579,255.20, awarded to the Canadian Pacific Railway Company in 1891 by the special arbitrators in respect of transferred works in British Columbia, and to be expended by the company, under Government supervision, in certain specified directions, the total value of the work executed up to November, 1898, is \$579,022.53, which includes the expenditure, \$202,675.20, prior to the date of the award, leaving still to be expended the sum of \$233.67. A report from the Chief Engineer will be found in Part I., p. 28, giving certain information in respect of this railway.

It should be noted that for the year ended on the 30th June, 1898, the Company had under traffic, in Canada, 6,334 miles of railway, including leased lines, and 36 miles over which it has running powers. Its gross earnings were \$25,470,796.18 (as against 6,314 miles of railway, and earnings \$21,242,638.75 the previous year). The total expenditure for working expenses was \$14,684,790.65 making the net earnings \$10,786,005.53, an increase of \$2,120,167.20 over the net earnings of the previous year. The company carried 3,327,368 passengers and 5,493,030 tons of freight. These figures, *which apply only to the traffic in Canada*, are taken from the sworn statements of the company, furnished in accordance with the Railway Act. (See Railway Statistics, appendix Part VI.)

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\* This does not include an annual subsidy of \$186,600 to the Atlantic and North-west Railway Company for 20 years from the 1st of July, 1889, nor interest at 5 per cent on the sum of \$2,394,000, payable to the province of Quebec for the line from Quebec to Ottawa, which sum has been transferred to the Public Debt.

† A summarized statement showing the transactions of the government with the company will be found in the Annual Reports of this Department for the years 1887 and 1896, the road having been opened for through traffic in June, 1886.

# Department of Railways and Canals.

## GOVERNMENT RAILWAYS IN OPERATION.\*

The several lines maintained by the Government are: The Intercolonial, the Windsor Branch (maintained only), and the Prince Edward Island Railways.

Details respecting these railways and their operations will be found in the Appendices, Part I., containing reports from the Chief Engineer of the department, the General Manager of Government Railways, and the officials of these roads.

The gross earnings of all the Government roads for the past fiscal year amounted to \$3,313,847.10, and compared with those of the preceding year show an increase of \$253,772.72. The gross working expenses amounted to \$3,577,248.88, an increase of \$399,979.27.

The net loss on the operations of the year was \$263,401.78.

The above figures include the sum of \$70,000 rent, paid for the extension of the Intercolonial into Montreal.

## INTERCOLONIAL RAILWAY.

On the 1st of March, 1898, the operations of the Intercolonial were extended to Montreal by means of leases obtained from the Grand Trunk and Drummond County Railway Companies, making an addition of 169.81 miles to the operation of the government line, its length being 1,314 miles instead of 1,145.

### CAPITAL ACCOUNT.

During the fiscal year there was an addition of \$252,756.80 to the Capital Account expenditure, making the total expenditure chargeable to "Capital," on the whole road as amalgamated under the Act 54-55 Vic., ch. 50 (1891), up to the 30th June, 1898, \$55,668,913.95.

The additions made during the year included \$56,651.93 for increased accommodation at Halifax, \$93,943.08 for increased accommodation at Moncton, \$19,820.48 for the extension to deep water at North Sydney, and \$65,510.92 on rolling stock.

### REVENUE ACCOUNT.

The gross earnings of the year amounted to \$3,117,669.85 an increase of \$251,641.83, and the working expenses (exclusive of \$70,000 rent paid for the extension to Montreal) to \$3,257,648.51, an increase of \$331,679.84, making the excess of expenditure \$139,978.66.

---

\* NOTE—In considering the various financial statements, comparative and otherwise, which appear in the reports of the Chief Engineer and those of the General Manager and other officers of the Intercolonial Railway, it is essential to bear in mind that on the 1st of March, 1898, the government, under leases obtained by it from the Grand Trunk Railway Company and the Drummond County Railway Company commenced the extension of the operations of the Intercolonial into the City of Montreal, and, thereby, the mileage of that railway was, for the four months between the 1st of March and the 30th of June, increased to the extent of 169.41 miles, namely from 1,145 to 1,314 miles. The statements furnished by the General Manager and the Accountant as to the earnings and expenditures per mile of railway are based on an average for the year of 1,201.63 miles. It has further to be noted that in their statements of expenditure, the amounts of rental paid to the said two companies are not included in the working expenses of the year, but are separately stated; the result being that there is an apparent discrepancy between the figures of the General Manager on pages 56 and 57, where the loss on the year's operations is set down at \$139,978.66, and those of the Chief Engineer of the Department on page 19, where the amount is \$209,978.66, the difference, \$70,000, being the rentals in question.



Comparing the earnings with those of the previous year, the passenger traffic produced \$1,053,864.64, an increase of \$74,859.07; the freight traffic amounted to \$1,857,740.06, an increase of \$170,689.74, and the carriage of mails and express freight produced \$206,065.15, an increase of \$6,093.12. The earnings per mile were \$2,594.53,\* an increase of \$91.45.

#### GENERAL OBSERVATIONS.

A comparison of the traffic of the past fiscal year with that of the previous year shows certain interesting features.

The number of passengers carried was 1,528,444, an increase of 26,754 in through and local traffic, and 1,434,576 tons of freight were carried, an increase of 138,548 tons.

Of flour 987,408 barrels were carried, an increase of 139,707. Of grain 1,551,372 bushels were carried, an increase of 457,873; of this, 8,000 bushels was for shipment at Halifax. Lumber showed an increase of 10,738,091 superficial feet, the total quantity carried being 254,093,816 feet. There was an increase of 17,219 in the number of live stock, of which 89,301 head were carried. 369,949 tons of coal, a decrease of 13,413 tons, were carried. Of raw sugar, none was carried. Of refined sugar, 26,434 tons, an increase of 5,714, were carried, of which 15,445 tons was for points west of the road. A total of 8,330 tons of fresh fish, an increase of 622 tons, and a total of 5,005 tons of salt fish, a decrease of 875 tons, were carried.

Of ocean borne goods to and from Europe via Halifax, the aggregate was 26,220 tons, an increase of 6,064 tons. Of this, 18,633 tons was local traffic.

In the winter of 1897-98 the removal of snow and ice entailed an expenditure of \$58,370.90, about \$25,000 more than the cost the previous year.

The permanent way and all structures and works are in good order.

The train mileage (or number of miles run by trains) of the year was 3,955,009, an increase of 175,726 miles. The cost per train mile was 82.37 cents; 4.95 cents higher than in the previous year.

The working expenses per mile of railway amounted to \$2,711.02, an increase of \$155.59 per mile.

The value of stores on hand at the close of the fiscal year, including fuel, rails and old material, was \$468,462.20.

A number of interesting statistical and comparative tables and other information relating to the railway and the several features of its traffic during the past year and the previous years of its operation, will be found in the appended reports of the Chief Engineer of the department and of the officers of the road.

#### WINDSOR BRANCH,

This road is 32 miles in length. It extends from Windsor Junction, on the Inter-colonial Railway, to Windsor.

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\* These figures are based on an *average* mileage of 1,201.63 in 1897-98, and an average mileage of 1,145 in 1896-97.



## Department of Railways and Canals.

This railway is operated by the Dominion Atlantic Railway Company, formerly the Windsor and Annapolis Railway Company. The company pay all charges in connection with the working of the traffic, two-thirds of the gross earnings being allowed them, the Government taking the remaining one-third, and assuming all costs of maintenance of the road and works. This arrangement is carried out under an agreement dated the 13th of December, 1892, which extends, for a further term of 21 years, arrangements similar to those made in 1871.

All charges for superintendence and supervision of maintenance of works are borne by the Government; the duty of supervision being performed by the chief officers of the Intercolonial Railway.

The gross earnings of the Government (one-third of gross receipts) amounted to \$37,226.64, a decrease of \$3,376.59. The expenses of maintenance amounted to \$18,181.63, an increase of \$7,360.59, leaving the profit to the Government \$19,045.01.

The road has been maintained in good order. Details will be found in the appendices. (*See Part I., p. 90.*)

### PRINCE EDWARD ISLAND RAILWAY.

#### CAPITAL ACCOUNT.

The total cost of the road and equipment chargeable to capital account at the close of the fiscal year was \$3,768,107.26; there being an addition during the year of \$17,541.88 on account of new works, including the shortening of the line between North Wiltshire and Colville and a survey for a branch from South Port to Murray Harbour.

#### REVENUE ACCOUNT.

The gross earnings amounted to \$158,950.61, and the working expenses to \$231,418.74; the expenditure in excess being \$72,468.13.

Compared with the previous year, the gross earnings show an increase of \$5,507.48. The railway carried 126,510 passengers, an increase of 4,012, producing \$63,734.61, an increase of \$1,039.54. Of freight there was carried 57,539 tons, an increase of 5,388 tons, producing \$75,845.60, an increase of \$5,972.94, while the earnings from mails and sundries amounted to \$19,370.40, a decrease of \$1,505.

Compared with the previous year, the working expenses were less by the sum of \$9,069.16.

The train mileage (the number of miles run by trains) was 252,894, a decrease of 1,135 miles.

The cost per mile run by trains was 91.51 cents, a decrease of 3.16 cents; and per mile of railway \$1,101.99, a decrease of \$43.20 per mile.

The value of stores on hand at the close of the fiscal year was \$91,094.75.

The road, with its buildings and rolling stock, has been maintained in a satisfactory condition.

Details of operations will be found in the Appendices, Part I., p. 94, and in those of the general manager and other officers.

## GOVERNMENT ACTION AS TO SUBSIDIZED RAILWAYS.

NOTE.—The numbers within brackets after the title of the company refer to the lists of railways subsidized by Parliament, in part III.

With regard to the several lines of railway subsidized by the Dominion, the following represents the action taken and the progress made, in so far as the Dominion Government is concerned ; only those lines and companies being mentioned as to which definite steps, other than merely preliminary, have been taken towards securing the subsidy. Information has been brought down to the end of the fiscal year, the 30th of June, 1898, only.

The following shows the aggregate of the payments made on ordinary subsidy account since the system of subsidizing railway enterprises was commenced :

For the fiscal year 1883-84, ended on June 30, 1884				\$	208,000	00
do	1884-85	do	1885		403,245	00
do	1885-86	do	1886		2,171,249	00
do	1886-87	do	1887		1,406,533	00
do	1887-88	do	1888		1,027,071	92
do	1888-89	do	1889		846,721	83
do	1889-90	do	1890		1,491,595	72
do	1890-91	do	1891		1,079,105	87
do	1891-92	do	1892		1,061,615	93
do	1892-93	do	1893		624,794	07
do	1893-94	do	1894		1,043,285	10
do	1894-95	do	1895		1,123,949	10
do	1895-96	do	1896		648,145	49
do	1896-97	do	1897		230,355	30
do	1897-98	do	1898		1,228,334	78
					\$14,593,972	11

To the above there have to be added the following exceptional subsidies :

Canada Central Railway.....	\$	1,525,250	00
Canadian Pacific Railway.....		25,000,000	00
“ “ extension.....		1,500,000	00
Western Counties Railway (Digby-Annapolis section)		500,000	00

Total subsidies paid up to the 30th of June, 1898. \$43,119,222 11

The above does not include the annual subsidy payable to the Atlantic and North-west Railway Company, nor the amount due to the province of Quebec for the railway between Ottawa and Quebec, which has now been transferred to the public debt. (*See note on page 44 of the Accountant's statement, Part II.*)

The following pages show, in alphabetical sequence, the position of those companies whose dealings with the Government in respect of subsidies are not yet closed. Reports of previous years give information as to companies whose subsidies have been fully earned and paid prior to the 1st of July, 1897.

## Department of Railways and Canals.

A tabulated statement of payments will be found in Part II., page 45, and a list of subsidy agreements entered into during the fiscal year in Part IV., page 2.

The several Subsidy Acts passed in each year from 1882 will be found in Part III. No subsidies were authorized in the sessions of 1895, 1896, and 1898.

**Albert Southern Railway Company.**

(See Annual Report of 1891-92.)

**Atlantic and North-west Railway Company.**

(See Annual Report of 1889-90.)

**Baie des Chaleurs Railway Company.**

(See Annual Report of 1895-96.)

**Beauharnois Junction Railway Company.**

(See Annual Report of 1895-96.)

**Belleville and North Hastings Railway Company.**

(See Annual Report of 1888-89.)

**Boston and Nova Scotia Coal Company.**

(See Annual Report of 1895-96.)

**Brockville, Westport and Sault Ste. Marie Railway Company.**

(See Annual Report of 1896-97.)

**Brantford, Waterloo and Lake Erie Railway Company.**

(See Annual Report for 1895-96.)

**Buctouche and Moncton Railway Company.**

(See Annual Report for 1893-94.)

**Canada Atlantic Railway Company.**

(See Annual Report for 1888-89.)

**Canada Eastern Railway Company.**

(See Annual Report for 1894-95.)

**Canadian Pacific Railway Company.**

Revelstoke to Arrow Lake.

(See Annual Report for 1896-97.)

**Canadian Pacific Railway Company.**

(Crow's Nest Pass Railway.)

(See No. 415.)

By the special Act 60-61 Vic., ch. 5 (1897), authority was given for the grant to the Canadian Pacific Railway Company, of a subsidy towards the construction of a railway from Lethbridge, through the Crow's Nest Pass, to Nelson, such subsidy being to the extent of \$11,000 a mile, not exceeding in the whole, \$3,630,000. A contract for this work was entered into with the company, on the 6th of September, 1897, the line to be completed to the South end of Kootenay Lake, by the 31st of December, 1898, and to Nelson, by the 31st of December, 1900. The total payments made up to the 30th of June, 1898, amount to \$453,750.

**Cap de la Madeleine Railway Company.**

(See Annual Report of 1896-97.)

**Cape Breton Railway Extension Company.**

(See Annual Report of 1895-96.)



**Caraquet Railway Company.**  
(See Annual Report of 1888-89.)

**Central Railway Company of New Brunswick.**  
(See Nos. 40, 143, 156, 205, 353 and 382.)

By the Act of 1884, 47 Vic., ch. 8, a subsidy not exceeding \$128,000 was granted in aid of the construction of about 40 miles of the Central Railway, from the head of the Grand Lake to a point on the Intercolonial Railway between Sussex and St. John, N.B.

Under the authority of an Order in Council of the 5th of June, 1886, a contract was made with the Central Railway Company, on the 7th July, 1886, for a line from Salmon River, at the head of Grand Lake, to Norton, on the Intercolonial Railway; work to be completed by the 1st of July, 1888. Certain work has been executed, but the contract obligations had not been carried out, and no portion of the subsidy was paid. The subsidy lapsed, but was revived by the Subsidy Act, 52 Vic., ch. 3 (1889).

On the 1st of December, 1890, a new contract was made with the company for this work under the Subsidy Act of 1889, the limit of subsidy being \$128,000: this contract covered also a subsidy for  $4\frac{1}{2}$  miles, the limit of which was \$14,400, authorized by the Act, 53 Vic., ch. 2, making a total subsidy of \$142,400; the total length of road subsidized being  $44\frac{1}{2}$  miles. The date for completion was fixed as the 1st of December, 1891.

By the Act 51 Vic., ch. 3, a grant as a subsidy to this company was authorized of used iron rails to the value of \$83,612.54, loaned to the St. Martin's and Upham Railway Company (which railway has been acquired by the Central Railway Company; the sale being approved by an Order in Council of the 15th of November, 1887), the condition of the grant being that such rails should first be replaced by new steel rails. The new steel rails were substituted, and an Order in Council of the 18th of October, 1889, authorized the transfer of the rails to the company.

By the Subsidy Act of 1894, 57-58 Vic., ch. 4, the grant of a subsidy, not exceeding \$48,000, to this company was authorized for 15 miles of their railway from Chipman station to the Newcastle coal fields, and a contract for the work was made with the company on the 7th of September, 1895.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), the subsidy of 1894 for the said 15 miles was, in effect, revoked, with addition of 50 per cent of cost over \$15,000 a mile, the total subsidy not to exceed \$6,400 a mile.

Up to the end of the fiscal year 1891-92, there had been paid, including the value of the said rails, the sum of \$159,251.54; no payments have since been made up to the 30th of June, 1898.

**Chatham Branch Railway Company.**  
(See Annual Report of 1893-94.)

**Chignecto Marine Transport Company.**  
(See Annual Report for 1894-95.)

**Coast Railway Company of Nova Scotia.**  
(See No. 403.)

## Department of Railways and Canals.

This company was incorporated by the Provincial Act of Nova Scotia, 56 Vic., ch. 154 (1893), to build a line of railway from Yarmouth to Lockeport ; a subsequent Act, 59 Vic., ch. 103 (1896) extending its powers.

By the Dominion Subsidy Act 60-61 Vic., ch. 4 (1897), the grant of a subsidy to this company for 61 miles of their railway from Yarmouth to Port Clyde was authorized, the amount being \$3,200 a mile, with an addition of 50 per cent on the cost in excess of \$15,000 a mile, the whole subsidy not to exceed \$6,400 a mile.

The company were admitted to contract on the 26th of August, 1897, the road to be completed by the 1st of September, 1899.

During the past fiscal year they have been paid the sum of \$90,400.

### **Cobourg, Northumberland and Pacific Railway Company.**

(See Nos. 301, 249, 275 and 378.)

This company was incorporated by the Act 52 Vic., ch. 62 (1889), for the construction of a line of railway from Cobourg Harbour to the River Trent, to the Ontario and Quebec Railway, and to the mining regions of Marmora and Belmont.

By subsequent legislation in 1891, 1892 and 1894, the company's charter has been revived, and powers given for extension to the mineral lands of the county of Hastings, and for leasing the road to the Canadian Pacific Railway Company ; the time for completion being extended to the 9th of July, 1898.

By the Subsidy Act of 1890, assistance to the extent of \$96,000 was authorized for 30 miles of the company's railway from Cobourg to the Ontario and Quebec Railway, and by the Subsidy Act of 1892, an additional subsidy of \$60,800 was authorized for 19 miles. By the same Act the subsidy voted in 1890, was revoked.

A contract for the construction of the 49 miles subsidized was entered into with the company on the 16th of June, 1894, the date for completion being fixed as the 1st of August, 1896.

By an Order in Council of the 28th of December, 1894, approval has been given to an agreement between the company and the Canadian Pacific Railway Company, dated the 30th of June, 1894, for the lease of the road to the latter company, when completed, for a term of 999 years.

By the Subsidy Act of 1897, 60-61 Vic., ch. 4, in lieu of the subsidies granted by the Act of 1892, subsidy was authorized for 50 miles of railway from Cobourg to the Ontario and Quebec Railway, namely \$3,200 a mile, with a further subsidy of 50 per cent on cost in excess of \$15,000 a mile, the total subsidy not to exceed \$6,400 a mile.

Under date the 25th of April, 1898, a contract was entered into with the company for this work, the date for completion to be the 1st of July, 1900.

No payments have been made up to the 30th of June, 1898.

### **Columbia and Kootenay Railway and Navigation Company.**

*(Leased to the Canadian Pacific Railway Company.)*

(See Annual Report for 1891-92.)

### **Cornwallis Valley Railway Company.**

(See Annual Report for 1891-92.)



**Cumberland Railway and Coal Company.**

(See Annual Report for 1894-95.)

**Dominion Atlantic Railway Company.**

(See Western Counties Railway Company.)

**Dominion Eastern Railway Company.**

(No. 399.)

By the Subsidy Act 60-61 Vic., ch. 4 (1897), the grant of a subsidy was authorized for a railway from Sunny Brae to Country Harbour, and from a point at or near Country Harbour Cross Roads to Guysboro, N.S., 65 miles, namely \$3,200 a mile, with an addition of 50 per cent on the cost in excess of \$15,000 a mile, not exceeding in all \$6,400 a mile.

The Dominion Eastern Railway Company having applied, they were admitted to contract on the 25th of March, 1898, for the work so subsidized, the date for completion being fixed as the 1st of July, 1901. No payments have been made up to the 30th of June, 1898

**Dominion Lime Company.**

(See Annual Report for 1888-89.)

**Dominion Coal Company.**

(See Annual Report for 1895-96.)

**Drummond County Railway Company.**

(See Nos. 99, 175, 214, 292, 339 and 406.)

By the Railway Subsidy Act of 1888, 50-51 Vic., ch. 24, the grant of aid to an extent not exceeding \$96,000 was authorized to the Drummond County Railway Company for 30 miles of their railway from Drummondville towards Nicolet, Quebec.

Under the authority of an Order in Council of the 12th of November, 1887, a contract was made with the company on the 1st of December, 1887, covering a line from the South-eastern Railway, at the village of Drummondville, to the south-west branch of the River Nicolet ; the road to be completed by the 1st of August, 1891.

On the 2nd of May, 1889, the company were admitted to contract for the balance, 17½ miles, of the 30 miles subsidized.

By the Subsidy Act of 1889, 52 Vic., ch. 3, the company were further subsidized for 4½ miles from the end of the line already subsidized, to Ball's wharf, on the River St. Lawrence, to the extent of \$14,400, and were admitted to contract on the 21st of January, 1890.

By the Subsidy Act 53 Vic., ch. 2 (1890), authority was given for the grant of a subsidy, the limit of which was \$76,800, for 24 miles of the railway of the company from Drummondville to Ste. Rosalie. Under date the 2nd of February, 1891, the company were admitted to contract for this work.

By the Subsidy Act 55-56 Vic., ch. 5 (1892), authority was given for the grant of a subsidy to the company for  $4\frac{6}{10}$  miles from Ball's wharf, to Ste. Rosalie Junction, not exceeding \$14,720.



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By the Subsidy Act 57-58 Vic., ch. 4 (1894), authority was given for the grant of a subsidy to this company for 30 miles of railway from St. Leonard northerly towards a junction with the Intercolonial at Chaudière Junction; the limit being fixed at \$96,000, and a contract for the work was made with the company on the 14th of November, 1894.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), the grant of a subsidy to this company of \$3,200 a mile for 42½ miles from Moose Park to Chaudière was authorized, with an addition of 50 per cent on the cost exceeding \$15,000 a mile, the amount of such subsidy to be refunded to the Government in the event of its purchasing or leasing for a term of years their railway from Ste. Rosalie to Chaudière River. A contract was made with the company for this work on the 13th of December, 1897; work to be completed by the 1st of September, 1898.

Under an agreement dated the 25th of February, 1898, the Government, in connection with the extension of the Intercolonial Railway traffic into Montreal, leased from the company their line from Ste. Rosalie to Chaudière, for the period between the 1st of March and the 30th of June, 1898, with option of renewal for one year, and also option of purchase.

The total payments up to the 30th of June, 1895, amounted to \$287,936. No further payments have been made up to the 30th of June, 1898.

### **East Richelieu Valley Railway Company.**

(No. 395.)

By the Subsidy Act 60-61 Vic., ch. 4 (1897), the grant of a subsidy to the East Richelieu Valley Railway Company was authorized, namely, for 24 miles of their railway from Iberville to St. Thomas, P.Q., \$3,200 a mile, with an addition of 50 per cent on cost in excess of \$15,000 a mile, the whole not exceeding \$6,400 a mile.

A contract was entered into with the company for the work so subsidized on the 1st of March, 1898, but no payments have been made up to the 30th of June, 1898.

### **Elgin, Petitcodiac and Havelock Railway Company.**

(See Annual Report for 1885-86 and 1890-91.)

### **Erie and Huron Railway Company.**

(See Annual Report for 1886-87.)

### **Esquimalt and Nanaimo Railway Company.**

(See Annual Report for 1886-87.)

### **Fredericton and St. Mary's Bridge Company.**

(See Annual Report for 1888-89.)

### **Grand Trunk, Georgian Bay and Lake Erie Railway Company.**

(See Annual Report for 1893-94.)

### **Grand Trunk Railway Company.**

(See No. 410).

By the Subsidy Act 60-61 Vic., ch. 4 (1897), the grant of a subsidy to the Grand Trunk Railway Company towards the rebuilding and enlargement of the Victoria Bridge over the River St. Lawrence at Montreal was authorized, namely, 15 per cent of the cost of the work, not exceeding \$300,000, and a contract to this effect was made with the company on the 14th of January, 1898.

The work undertaken is the removal of the old tubular iron bridge (a single track bridge) and the erection, without interruption to traffic, of a new steel truss bridge to carry four railway tracks—two for steam locomotives and ordinary railway trains, and two for electric railway purposes—and also two sidewalks, the superstructure to consist of 24 spans of through steel trusses each 254 feet long and one span of 348 feet.

Up to the 30th of June, 1898, the company had been paid from the said subsidy, a total of \$131,268.52.

**Great Eastern Railway Company.**

(See Annual Report for 1896-97.)

**Great Northern Railway Company.**

(See Nos. 33, 37, 72, 79, 154, 215, 231, 308, 309, 346, 371, 380, 405, 407 and 413.)

By the Act 47 Vic., ch. 8 (1884), a subsidy not exceeding \$32,000 was granted to this company for the construction of a line from St. Jérôme to New Glasgow, Que., the estimated length being 10 miles.

Under the authority of an Order in Council of the 3rd February, 1885, a contract for the work was entered into with the company on the 14th of that month, the road to be completed by the 1st of July, 1885.

The line was duly completed and inspected. Under an Order in Council of the 2nd March, 1885, payment was made therefor, namely 7.84 miles, \$25,088.

By the Act 49 Vic., ch. 10 (1886), a subsidy not exceeding \$57,600 was authorized for a line from New Glasgow to Montcalm, a distance of about 18 miles. The Great Northern Railway Company having applied for it, it was granted to them by an Order in Council of the 18th July, 1887, which also approved of the location. The contract was made on the 19th of August, 1887, the road to be completed by the 1st of August, 1890.

By the Act 49 Vic., ch. 10, a subsidy not exceeding \$22,400 was granted for a line from St. Andrews to Lachute, Que., 7 miles. For this subsidy the abone named company applied, but no contract was made. The same subsidy was again voted by the Act of 1889, 52 Vic., ch. 3, and under date the 8th of October, 1890, a contract was entered into with them for the work, calling for completion by the 1st of August, 1891. The road was built and allowed to be opened for public traffic in January, 1892.

By the Act 53 Vic., ch. 2 (1890), the grant of a subsidy was authorized, limited to \$48,000, for a line from, at or near Montcalm to the Canadian Pacific Railway, between Joliette and St. Félix de Valois, fifteen miles.

By the Act 54-55 Vic., ch. 2 (1891), the unpaid balance, \$28,100 of the subsidy granted in 1886, was revoted.

By the Act 56 Vic., ch. 8 (1893), the unpaid balance, \$25,600 of the subsidy granted in 1891, was revoted, and a new contract for this work was entered into with the company on the 16th of June, 1894.

Also, by the same Act, the subsidy not exceeding \$48,000 granted to the company for 15 miles of their railway from Montcalm to the Canadian Pacific Railway, between



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Joliette and St. Félix de Valois, by 53 Vic., ch. 2, was revoked, and a contract for this work was entered into with them on the 16th of June, 1894.

By the Subsidy Act 57-58 Vic., ch. 4 (1894), the grant to this company of a subsidy limited to \$96,000, was authorized for 30 miles of railway from a junction with the Lower Laurentian Railway near St. Tite, westwards, in lieu of a subsidy previously granted to the Maskinongé and Nipissing Railway Company. A contract was entered into with the company for this work on the 16th September, 1895, the railway to be completed by the 30th of November, 1896.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), payment was authorized of unpaid balances for 67 miles of railway, between Montcalm and the junction with the Lower Laurentian Railway near St. Tite, not exceeding \$182,400; also a subsidy of 15 per cent, not exceeding \$52,500, of the cost of a bridge over the River Ottawa at Hawkesbury. Also, for 9 miles shortage in distance between Montcalm and St. Tite; also, for 35 miles from St. Jérôme to Hawkesbury; the last two being subsidies of \$3,200 per mile with 50 per cent of expenditure in excess of \$15,000 per mile, the total not to exceed \$6,400 per mile.

The total payments to this company, up to the 30th of June, 1896, amount to \$142,688. No further payments have been made up to the 30th of June, 1898.

### **Gulf Shore Railway Company of New Brunswick.**

(See Nos. 374 and 383.)

This company was incorporated by the New Brunswick Act 48 Vic., ch. 49 (1885), with powers to construct a railway from some point on the Caraquet Railway to the village of Tracadie or to some point in the parish of Sumarey, county of Gloucester. The Charter Act was revived by the Act 57 Vic., ch. 73 (1894).

By the Dominion Subsidy Act 57-58 Vic., ch. 4 (1894), assistance was authorized to the extent of \$38,400 for a railway from a point on the Caraquet Railway at or near Pokemouche siding towards Tracadie village, 12 miles.

The above company having applied, they were admitted to contract for the work on the 22nd of April, 1896, and were paid during the fiscal year 1896-97, \$28,635.05.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), authority was given for the grant to them of a subsidy for  $5\frac{1}{2}$  miles from the end of the section subsidized to Tracadie and thence to Big Tracadie, namely \$3,200 a mile with an additional 50 per cent of expenditure in excess of \$15,000 a mile, to a limit, in all, of \$6,400. The company were admitted to contract on the 29th of October, 1897, and during the fiscal year have been paid \$25,064.15, making the total paid to the 30th of June, 1898, \$53,699.20.

### **Guelph Junction Railway Company.**

(See Annual Report of 1888-89.)

### **Harvey Branch Railway Company.**

(See Annual Report of 1889-90.)

### **Hereford Railway Company (formerly Hereford Branch Railway Company).**

(See Annual Report of 1891-92.)

### **International Railway Company.**

(See Annual Reports of 1887-88 and 1889-90.)

### **Inverness and Richmond Railway Company.**

(See Nos. 208, 357, and 400.)



This company was incorporated by the Act of the province of Nova Scotia, 50 Vic., ch. 60 (1887), with powers for the construction of a line of railway between Hawkesbury and a point in the district of Margaree. By the Act of 1888, ch. 79, the location of the line was authorized as from Port Hawkesbury, through Port Hastings, Judique, Port Hood, Mabou and Margaree, to a point at Eastern Harbour, Cheticamp.

By the Subsidy Act 57-58 Vic., ch. 4 (1894), assistance to the extent of \$80,000 was authorized for 25 miles of railway from Port Hawkesbury towards Cheticamp, and the above company was admitted to contract for the work on the 23rd of November, 1894, the time for completion being fixed at the first of December, 1896.

By the Subsidy Act of 1897, 60-61 Vic., ch. 4, in lieu of the subsidy granted in 1894 a subsidy of \$3,200 a mile with an addition of 50 per cent on expenditure in excess of \$15,000 a mile, such subsidy in all not to exceed \$6,400 a mile was authorized for a railway from Port Hawkesbury to Port Hood and Broad Cove, 53 miles, and the company were admitted to contract thereunder on the 29th of April, 1898, the work to be completed by the 1st of December, 1898.

No payments have been made up to the 30th of June, 1898.

**Irondale, Bancroft and Ottawa Railway Company.**

(See Nos. 24, 159, 301, and 412.)

By the Act 47 Vic., ch. 8 (1894), the Irondale, Bancroft and Ottawa Railway Company were subsidized, to an extent not exceeding \$160,000, for a line, about 50 miles long, to connect the Victoria Branch of the Midland Railway with the village of Bancroft.

With the sanction of an Order in Council of the 10th July, 1886, a contract was made with the company on the 19th of August, 1886.

The unpaid balance of subsidy, \$145,000, which had lapsed, was revoted by the Act 52 Vic., ch. 3 (1889), and was again revoted by the Act 56 Vic., ch. 2 (1893).

By the Subsidy Act 60-61 Vic., ch. 4 (1897), in lieu of the subsidy voted in 1893, the sum of \$16,000 was voted for the last five miles of this railway as the unpaid balance. The company were admitted to contract on the 20th of September, 1897.

The total payments amounted to \$144,000, up to the 30th June, 1897. No payments were made during the past fiscal year.

**Joggins Railway Company.**

(See Annual Report for 1891-92.)

**Kingston, Napanee and Western Railway Company.**

(See Napanee, Tamworth and Quebec Railway.)

**Kingston and Pembroke Railway Company.**

(See Annual Report for 1884-85.)

**Lake Erie and Detroit River Railway Company.**

Formerly "the Lake Erie, Essex and Detroit Railway Company." Name changed by Dominion Act, 54-55 Vic., ch. 88 (1891).

(See Annual Report for 1893-94.)

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### **L'Assomption Railway Company.**

(See Annual Report of 1886-87.)

### **Leamington and St. Clair Railway Company.**

(See Annual Report of 1888-89.)

### **Lake Temiscamingue Colonization Railway Company.**

(See Annual Report of 1896-97.)

### **Lotbinière and Mégantic Railway Company.**

(See Annual Report of 1896-97.)

### **Midland Railway Company.**

(No. 336.)

This company was incorporated by the Act of the province of Nova Scotia, 59 Vic., ch. 85 (1896), with powers to build a railway from Windsor to a point at or near Maitland, thence via Clifton to a point between Truro and Stewiacke, on the Intercolonial; thence to Eastville; with extensions and branches to coal and iron fields, and shipping ports.

By the Dominion Subsidy Act, 57-58 Vic., ch. 4 (1894), authority was given for the grant of a subsidy of \$3,200 per mile for 90 miles of railway, from Newport or Windsor to Truro, or to a point between Truro and Stewiacke, and from a point on the said railway to a point at or near Eastville, and from Eastville, through the valley of Musquodoboit River, towards a point on the Dartmouth branch of the Intercolonial, in lieu of a subsidy authorized in 1892; also for a railway bridge over the River Shubenacadie, a subsidy of 15 per cent on the value of the structure; the total of the subsidies not to exceed \$300,000.

The Midland Railway Company having applied, were admitted to contract for these works on the 30th of July, 1896; the date for completion being fixed as the 1st of August, 1898.

No payments have been made up to the 30th of June, 1898.

### **Montfort Colonization Railway Company.**

(See Nos. 245, 310, 373 and 411.)

This company was incorporated by the Quebec Act, 53 Vic., ch. 107 (1890), for the construction of a railway from a point on the Canadian Pacific Railway, or the Montreal and Occidental Railway, either from Lachute, St. Jérôme or St. Sauveur, or near the same, to Montfort, and for the continuation of the road to a point on the Rivière Rouge, in the township of Arundel.

By the Subsidy Act 55-56 Vic., ch. 5 (1892), the grant of a subsidy to this company to the extent of \$67,200 was authorized for 21 miles of railway from Lachute, St. Jérôme, or a point at or near St. Sauveur, on the line of the Montreal and Western Railway to Montfort and westward.

By the Subsidy Act 56 Vic. (1893), this subsidy was revoked with an additional specifying the gauge as "three feet."



On the 16th May, 1893, a contract was entered into with this company for the construction of 21 miles of railway from St. Sauveur to Montfort and westward, the road to be completed by the 1st of September, 1895.

By the Subsidy Act 57-58 Vic., ch. 4 (1894), a subsidy to the company was authorized to the extent of \$38,400 for 12 miles from the end of the 21 miles previously subsidized, and the company were admitted to contract on the 30th of July, 1896; the River Rouge being the terminal point for the distance subsidized.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), authority was given for the grant to this company of a subsidy of \$2,000 a mile for 33 miles of their railway from Montfort Junction to Arundel; and the company were admitted to contract on the 29th of December, 1897.

Up to the 30th June, 1895, the sum of \$67,200 had been paid, and during the past fiscal year the further sum of \$35,840, making the total payments \$103,040 up to the 30th of June 1898.

**Montreal and Champlain Junction Railway Company.**

(See Annual Report for 1892-93.)

**Montreal and Lake Maskinongé Railway Company.**

(See Annual Report for 1890-91.)

**Montreal and Sorel Railway Company.**

(See Annual Report for 1892-93.)

**Montreal and Western Railway Company.**

(See Annual Report for 1893-94.)

**Montreal and Ottawa Railway Company.**

(Formerly "the Vaudreuil and Prescott Railway Company." Name changed by 53 Vic., ch. 58.)

(See Nos. 97, 186, 237 and 320.)

By the Railway Subsidy Act of 1887, 50-51 Vic., ch. 24, the grant of a subsidy to the above company was authorized for 30 miles of their railway from Vaudreuil towards Hawkesbury, the extent of such subsidy being \$96,000.

A contract was made with the company on the 11th of February, 1889, for the distance named, starting from the Grand Trunk Railway at Vaudreuil. The date for completion was fixed as the 1st August, 1891.

The company, on the 4th of October, 1890, were authorized to open the portion of their road between Vaudreuil and Rigaud, 16 miles, for public traffic.

By the Act 53 Vic., ch. 2 (1890), a subsidy for a further distance of 30 miles towards Ottawa, \$96,000, was authorized.

By the Act 54-55 Vic., ch. 8 (1891), the unpaid balance, \$46,040, of the subsidy granted in 1887, was revoked.

In September, 1892, after inspection, permission was given to open for traffic the portion of the road between Vaudreuil and Pointe Fortune, 23½ miles.



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By the Subsidy Act 57-58 Vic., ch. 4 (1894), the unpaid balances of subsidies granted in 1887 and 1890 were revoked, and a contract under this Act was made with the company, dated the 26th of June, 1896, the date for completion being fixed as the 1st of August, 1898.

During the past fiscal year the sum of \$40,000 was paid, making the total payments \$145,600 up to the 30th of June, 1898.

This railway has been leased in perpetuity to the Canadian Pacific Railway Company.

### **Napanee, Tamworth and Quebec Railway Company.**

*(Name changed to the **Kingston, Napanee and Western Railway Company** by the Act 53 Vic., ch. 62.)*

(See Annual Report of 1895-96.)

### **Nakusp and Slocan Railway Company.**

(See Annual Report for 1894-95.)

### **New Brunswick and Prince Edward Island Railway Company.**

(See Annual Report for 1888-89.)

### **New Glasgow Iron, Coal and Railway Company.**

(See Annual Report for 1895-96.)

### **Northern and Pacific Junction Railway Company.**

(See Annual Report of 1890-91.)

### **Northern and Western Railway Company.**

(See Annual Report of 1889-90.)

Also under head "Canada Eastern Railway in Annual Report of 1894-95."

### **Nova Scotia Central Railway Company.**

(See Nos. 129, 135 and 307.)

By the Subsidy Act of 1887, 50-51 Vic., ch. 24, the Nova Scotia Central Railway Company were subsidized for 34 miles of their railway, to an extent not exceeding \$108,800. Under an Order in Council of the 16th of September, 1887, the company were admitted to contract on the 17th of October, 1887, the works to be executed being a line of railway from Lunenburg, on the east coast of Nova Scotia, westward to a point in the district of New Germany, together with a spur, about  $\frac{3}{4}$  mile long, to Bridgewater Railway wharf, the whole to be completed by the 31st of December, 1889.

By the Act 51 Vic., ch. 3 (1888), the grant of further subsidy, not exceeding \$147,200, was authorized for 46 miles of the company's railway, and under an Order in Council of the 9th of October, 1888, a contract, dated the 15th of October, 1888, was executed, covering a line of railway,  $39\frac{1}{2}$  miles, starting from a point  $33\frac{1}{2}$  miles from Lunenburg, and running to Middleton, on the Windsor and Annapolis Railway; the work to be completed by the 31st of December, 1890.

By the Subsidy Act 56 Vic., ch. 2 (1893), the unpaid balance, \$4,500, was revoked. Up to the close of the fiscal year 1891-92, the total payments to this company amounted to \$230,700, covering the distance from Lunenburg to Middleton and the spur to Bridgewater, a total of  $73\frac{1}{2}$  miles. Authority for payment of the said balance of \$4,500

has been given by an Order in Council dated the 2nd of July, 1894, but no further payment has been made up to the 30th of June, 1898, pending decision on certain matters in litigation.

**Nova Scotia Southern Railway Company.**

(See Annual Report for 1896-97.)

**Ontario and Pacific Railway Company.**

(Name changed to Ottawa and New York Railway Company, by 60-61 Vic., ch. 57, 1897.)

(See Nos. 31, 115, 150, 288 and 375.)

By the Act 47 Vic., ch. 8 (1884), the grant of a subsidy to the Ontario and Pacific Railway Company was authorized, namely, to the extent of \$262,400, on an estimated distance of 82 miles, for a line from Cornwall to Perth; and on the 27th of July, 1886, a contract was made with the company, under the authority of an Order in Council of the first day of that month, for the construction of such line, via Newington, Chrysler, Manotick and Franktown; the road to be completed by the 1st of July, 1888. This subsidy lapsed on the 1st of July, 1888.

By the Act 50-51 Vic., ch. 24, a further subsidy of \$19,200 for a further distance of 6 miles was granted.

By the Act 52 Vic., ch. 3 (1889), a subsidy not exceeding \$172,400 was authorized to this company for a line from Cornwall to Ottawa.

By the Subsidy Act of 1892, 55-56 Vic., ch. 5, the subsidy granted in 1889 was revoked, the length being set down as  $53\frac{87}{100}$  miles. Under date the 1st of June, 1895, a contract was entered into with the company for the construction of this line from Cornwall to Ottawa, 53.87 miles; the work to be completed by the 1st of August, 1896.

By the special Act 60-61 Vic., ch. 57, the name of the company was changed to "The Ottawa and New York Railway Company," and its construction powers were extended to the 1st of July, 1891.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), in lieu of the subsidy voted in 1892, a subsidy was authorized of \$3,200 a mile, for 53.87 miles from Cornwall to Ottawa, with a further subsidy for expenditure in excess of \$15,000 a mile, to an extent of 50 per cent of such expenditure, the total subsidies not to exceed \$6,400 per mile.

The company were admitted to contract for the above on the 4th of December, 1897, the time for completion being fixed as the 1st of November, 1898.

During the fiscal year they have been paid \$33,600; the total payments up to the 30th of June, 1898.

**Ontario and Quebec Railway Company.**

(See West Ontario Pacific Railway Company, and Annual Report for 1891-92.)

**Ontario, Belmont and Northern Company.**

(See Annual Report for 1896-97.)

**Orford Mountain Railway Company.**

(See Annual Reports for 1893-94 and 1894-95.)



## Department of Railways and Canals.

### **Ottawa and New York Railway Company.**

(See Ontario Pacific Railway Company.)

### **Ottawa, Arnprior and Parry Sound Railway Company.**

(See Nos. 92, 134, 199, 242, 276, 277 and 388.)

This company was formed by the amalgamation, under the Act 54-55 Vic., ch. 93, of the Ottawa and Parry Sound Railway Company, incorporated by the Act 51 Vic., ch. 35, and the Ottawa, Arnprior and Renfrew Railway Company, incorporated by the Act 51 Vic., ch. 71. The company has powers to build a line of railway from the city of Ottawa through Arnprior, Renfrew, Eganville and Killaloe, to a point on the Georgian Bay at or near the village of Parry Sound. .

By the Subsidy Act 55-56 Vic., ch. 5 (1892), there were granted to this company the following subsidies (in lieu of subsidies previously granted but not utilized) :—

- (a.) For 22 miles of railway from a point on the Canadian Pacific Railway to Eganville, a subsidy limited to \$70,400.
- (b.) For 30 miles of railway from Eganville to Barry's Bay, a subsidy limited to \$96,000.
- (c.) For 55 miles of railway from Barry's Bay towards the Northern Pacific Junction Railway, a subsidy limited to \$6,400 a mile on the first half of that division, and to \$3,200 a mile on the second half, not exceeding in the whole \$264,000.

The first two subsidies were covered by a contract dated the 29th of September, 1892; the starting point on the Canadian Pacific Railway being Renfrew, and the date for completion being fixed as the 1st of August, 1896.

The third subsidy, from Barry's Bay towards the Northern Pacific Junction Railway, was covered by a contract with the company, dated the 8th of November, 1892, for which was substituted a contract dated the 20th of September, 1894.

By the end of the fiscal year 1895-96, the total payments to the company aggregated \$430,400, the whole amount of the subsidies. The distance covered thereby was to the end of the 55th mile west from Barry's Bay, or a total of 107 miles west from Renfrew, the whole distance subsidized.

By the Act 60 Vic., ch. 8 (1896), the company became amalgamated, under its own name, with the Parry Sound Colonization Railway Company.

A portion, the westerly  $47\frac{3}{4}$  miles of the amalgamated company's railway, namely between the crossing of the Northern Pacific Junction Railway and Parry Sound, had been subsidized under the name of the Parry Sound Colonization Railway Company, and at the close of the fiscal year 1895-96, there had been paid to that company a total of \$152,800.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), a subsidy was authorized for the portion, 52 miles, of the company's railway from the crossing of the Northern Pacific Junction Railway (at Scotia) to the point, 55 miles west of Barry's Bay, up to which previous subsidies had been granted; also for 4 miles of railway across Parry Island.



The new subsidy is \$3,200 per mile, with a further subsidy of 50 per cent on expenditure in excess of \$15,000 per mile; the total subsidies not to exceed \$6,400 per mile.

The company were admitted to contract under this Subsidy Act on the 7th of August, 1897; the work to be completed by the 1st of September, 1899.

During the past fiscal year they have been paid the sum of \$327,232, making the total payments to this company \$757,632 up to the 30th of June, 1898.

**Ottawa and Gatineau Valley Railway Company.**

*Name changed to the Ottawa and Gatineau Railway Company* (by the Act 57-58 Vic., ch. 87, which consolidated and amended Acts relating to the company).

(See Nos. 8, 26, 58, 151, 305, 349, 379 and 409.)

By the Act 48-49 Vic., ch. 29 (1885), the grant of a subsidy to this company was authorized (in lieu of subsidies granted in previous years), namely, for a line of railway from Hull station towards the village of Le Désert, 62 miles, the amount being \$320,000. The subsidy having lapsed, it was revoked by the Act 52 Vic., ch. 3 (1889).

Under authority of an Order in Council of the 10th of July, 1889, a contract with the company for the work in question, 62 miles, was signed on the 19th of August, 1889.

By the Subsidy Act 56 Vic., ch. 2 (1893), the unpaid balance, \$89,248, was revoked.

By the Subsidy Act 57-58 Vic., ch. 6 (1894), authority was given for subsidizing, to the extent of \$64,000, a further distance of 20 miles from the end of the 62 miles already subsidized, and a contract for the work was entered into with the company on the 7th of October, 1895.

By the Subsidy Act of 1897 (ch. 4) in lieu of this subsidy, the said 20 miles were subsidized to the extent of \$3,200 per mile, with a further subsidy of 50 per cent of the expenditure in excess of \$15,000 a mile; the total subsidy not to exceed \$6,400 a mile.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), the unpaid balance, \$35,872, of the vote of 1893 was revoked.

The total payments up to the 30th of June, 1894, amounted to \$284,128. No further payments have been made up to the 30th of June, 1898.

**Oshawa Railway and Navigation Company.**

*Name changed to the Oshawa Railway Company* by 54-55 Vic., ch. 91.

(See Annual Report for 1895-96.)

**Parry Sound Colonization Railway Company.**

(See Annual Report for 1895-96.)

**Philipsburg Junction Railway and Quarry Company.**

(See Annual Report for 1894-95.)

**Port Arthur, Duluth and Western Railway Company.**

(Formerly the Thunder Bay Colonization Railway Company.)

(See Annual Report for 1892-93.)

**Pontiac and Renfrew Railway Company.**

(See Annual Report for 1889-90.)

**Pontiac Pacific Junction Railway Company.**

(See Nos. 25, 138, 211, 294, 329, 330, 331, 385 and 408.)

## Department of Railways and Canals.

This company was incorporated by the Dominion Act 43 Vic., ch. 55 (1880), with powers to construct a railway from a point on the line of the Quebec, Montreal, Ottawa and Occidental Railway, at or near Hull or Aylmer, to a point in the county of Pontiac, suitable for crossing the River Ottawa, thence to Pembroke to connect with the Canada Central Railway.

The Act 45 Vic., ch. 69, gave authority for the construction of a bridge across the River Ottawa.

This line was subsidized in 1884, by 49 Vic., ch. 8, to the extent of \$3,200 a mile, not exceeding \$272,000.

Under authority of an Order in Council, dated the 12th of December, 1884, a contract, dated the 22nd of that month, was made with this company for the building of the line subsidized, namely, from Aylmer to Pembroke, crossing the River Ottawa at a point "not east of Lapasse;" the first twenty-seven miles to be completed by the 1st of September, 1885 (extended to the 15th of December by Order in Council of the 13th of August, 1885), the second twenty-seven miles by the 1st of July, 1886, and the whole road, estimated at eighty-five miles west of Aylmer, by the 1st of July, 1887.

By the Act 51 Vic., ch. 3 (1888), a subsidy to this company of \$31,500 was authorized for the bridging of the River Ottawa at Culbute; also a subsidy of \$9,600 for 3 miles of their railway from a point 3 miles east of Pembroke to Pembroke, provided that the entire work subsidized on this railway be completed within four years from the 22nd of May, 1888.

By the Act 53 Vic., ch. 2 (1890), a subsidy, limited to \$24,000, was authorized for  $7\frac{1}{2}$  miles of this railway, between Hull and Aylmer.

By the Act 53 Vic., ch. 68 (1890), the time for completion of the railway to the town of Pembroke, and of the bridge over the River Ottawa, at or near the city of Ottawa, which the company were empowered to construct by the Act 45 Vic., ch. 69, was extended to the 22nd of May, 1892. The same Act gave the company power to extend their line from the said bridge to the canal basin in the city of Ottawa.

The Act 53 Vic., ch. 69 (1890), gave to this company power to purchase from the Canadian Pacific Railway Company the section between Hull and Aylmer, or any part thereof.

By the Subsidy Act 55-56 Vic., ch. 5, clause 4 (1892), the balance unpaid of the subsidy voted in 1884 was revoked; and by the special Act of 1892, ch. 56, the time for the commencement of the bridge over the River Ottawa, at or near Ottawa, was extended for two years, and its completion for five years from the 9th of July, 1892. The time for the completion of the line to Pembroke was also extended for four years from that date.

By the Subsidy Act 57-58 Vic., ch. 4 (1894), the subsidies voted in 1888 were revoked, subject to the condition that the entire work subsidized on this railway should be completed within four years. The time for completion was thus extended, so far as subsidy is concerned, to the 23rd of July, 1898.



By the same Act the unpaid balance of the subsidy voted by ch. 8 of the Act of 1884, less \$24,000 for the 7½ miles from Hull to Aylmer, was revoked, namely, \$73,172.

By the same Act the sum of \$24,000, voted for the road from Hull to Aylmer in 1890, was, in effect, revoked.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), the unpaid balances of the subsidies granted by the Acts of 1884 and 1894, amounting to \$114,272, were revoked.

By the same Act the subsidy for 7½ miles from Hull to Aylmer, revoked by the Act of 1894, was, in effect, revoked, with the addition of 50 per cent on expenditure in excess of \$15,000 per mile, the total of the subsidies not to exceed \$6,400 per mile.

Up to the close of the fiscal year 1887-88, a total of \$174,828 had been paid out of the subsidy voted in 1884. During the fiscal year 1894-95 the sum of \$18,750 was paid, making a total of \$193,578. No payments were made during the past fiscal year.

**Quebec Central Railway Company.**

(See Annual Report of 1895-96.)

**Quebec and Lake St. John Railway Company.**

(See Annual Report for 1895-96.)

**Quebec, Montmorency and Charlevoix Railway Company.**

(See Annual Report of 1894-95.)

**Restigouche and Western Railway Company.**

(See No. 384.)

This company was incorporated by the Act of the Province of New Brunswick, 60 Vic., ch. 82 (1897), with powers to construct a railway from Campbellton, to a point on the River Saint John between Grand Falls and Edmundston.

By the Subsidy Act 60-61 Vic., ch. 4 (1897), there was authorized a subsidy for a railway from Campbellton on the I.C.R. towards Grand Falls, N.B., 20 miles, \$3,200 a mile, with an addition of 50 per cent on the cost in excess of \$15,000 a mile; the whole not to exceed \$6,400 a mile. This was in lieu of a previous subsidy to a specified company.

The Restigouche and Western Railway Company having applied were admitted to contract for the work on the 24th of December, 1897, but no portion of the subsidy had been paid up to the 30th of June, 1898.

**Shuswap and Okanagan Railway Company.**

(See Annual Report of 1894-95.)

**South Norfolk Railway Company.**

(See Annual Report of 1888-89.)

**South Shore Railway Company.**

(See Annual Report of 1896-97.)

**St. Catharines and Niagara Central Railway Company.**

(See Annual Report for 1895-96.)

**St. Clair Frontier Tunnel Company.**

(See Annual Reports of 1890-91 and 1891-92.)



## Department of Railways and Canals.

### **St. John Valley and Rivière du Loup Railway Company.**

(See Annual Report for 1893-94.)

### **St. Stephen and Milltown Railway Company.**

(See Annual Report for 1895-96.)

(No. 393.)

A further subsidy to this company was authorized by the Act 60-61 Vic., ch. 4 (1897), namely, for 1.14 mile of their railway from Milltown to St. Stephen, \$3,200 a mile, with 50 per cent additional on the cost in excess of \$15,000 a mile, not exceeding in all \$6,400 a mile. The company were admitted to contract for this work on the 29th of September, 1897, and during the fiscal year have been paid \$5,212.11, making the total payments to them \$16,848.

### **Stewiacke Valley and Lansdowne Railway Company.**

(See Annual Report for 1895-96.)

### **St. Lawrence and Adirondack Railway Company.**

(See Annual Report for 1893-94.)

(No. 394.)

A further subsidy to this company was authorized by the Act 60-61 Vic., ch. 4 (1897), namely, for  $13\frac{1}{2}$  miles of their railway from Beauharnois to Caughnawaga, \$3,200 a mile, with an addition of 50 per cent on expenditure in excess of \$15,000 a mile, such subsidy not to exceed in the whole \$6,400 a mile.

The company were admitted to contract on the 16th of October, 1897, and during the past fiscal year have been paid \$84,480, making the total payments \$149,481.60.

### **St. Lawrence, Lower Laurentian and Saguenay Railway Company.**

*Name changed to "Laurentian Railway Company" by Provincial Act 51-52 Vic., ch. 108.*

(See Annual Report of 1891-92.)

### **St. Louis and Richibucto Railway Company.**

(See Annual Report of 1884-85.)

### **Témiscouata Railway Company—Rivière du Loup to Edmundston.**

(See Annual Report for 1892-93.)

### **Thousand Islands Railway Company.**

(See Annual Report for 1895-96.)

### **Tilsonburg, Lake Erie and Pacific Railway Company.**

(See Annual Report for 1895-96.)

(No. 387.)

A further subsidy to this company was authorized by the Act 60-61 Vic., ch. 4 (1897), namely, for 3.50 miles from the then present terminus, through Tilsonburg to the Michigan Central Railway, \$3,200 a mile, with an addition of 50 per cent of the cost in excess of \$15,000 a mile, the whole not to exceed \$6,400 a mile.

Under date the 4th of December, 1897, the company were admitted to contract, but no portion of this subsidy had been paid up to the 30th of June, 1898.

**Tobique Valley Railway Company.**

(See Annual Report for 1893-94.)

**Toronto, Grey and Bruce Railway Company.**

(See Annual Report for 1887-88.)

**United Counties Railway Company.**

(See Nos. 297, 344 and 393.)

This company was incorporated by the Quebec Act 46 Vic., ch. 90 (1883), for the construction of a railway from a point on the line of the Montreal, Portland and Boston Railway, at Richelieu, to a point on the River Richelieu and the River St. Lawrence.

By the Subsidy Act 56 Vic., ch. 2 (1893), a subsidy to the extent of \$102,400 for 32 miles between Iberville and St. Hyacinthe, and beyond, towards Sorel, was authorized.

On the 19th of August, 1893, a contract was entered into with the company for this work.

By the Subsidy Act 57-58 Vic., ch. 4 (1894), a subsidy, limited to \$102,400, was authorized for a further distance of 32 miles, and on the 23rd of October, 1894, a contract was made with the company for the work, covering the whole distance from St. Hyacinthe to Sorel.

By the Act 60-61 Vic., ch. 4 (1897), the grant of a subsidy of \$3,200 a mile, with an addition of 50 per cent on the cost in excess of \$15,000 a mile, not exceeding in all \$6,400 a mile, was authorized for one mile of this company's railway from Johnson to St. Grégoire station.

During the past fiscal year, the sum of \$1,488 was paid, making the total payments \$188,816 up to the 30th June, 1898.

**Vaudreuil and Prescott Railway Company.**

(See *Montreal and Ottawa Railway Company*.)

**Waterloo Junction Railway Company.**

(See Annual Report for 1891-92.)

**Western Counties Railway Company.**

(Name changed to "**The Yarmouth and Annapolis Railway Company**," by 56 Vic., ch. 63.)

(Name further changed to "**The Dominion Atlantic Railway Company**" by 57-58 Vic., ch. 69.)

(See Annual Report for 1894-95.)

**West Ontario Pacific Railway Company.**

(Leased to the *Ontario and Quebec Railway Company—C. P. R.*)

(See Annual Report of 1890-91.)

**Woodstock and Centreville Railway Company.**

(See Annual Report for 1895-96.)

**Yarmouth and Annapolis Railway Company.**

(See *Western Counties Railway Company*.)

# Department of Railways and Canals.

## LAND SUBSIDIES.

A number of companies have been aided by subsidies in land, duly authorized by Parliament and granted by the Department of the Interior, to whose report reference must be had for information as to their position. Certain details in respect of these roads will, however, be found in the annual report of this department for 1896-97.

## CANALS.

The total expenditure charged to capital account on the original construction and the enlargement of the several canals of the Dominion up to the 30th of June, 1898, was \$72,504,401.85. A further sum of \$15,067,096.31\* was expended on the repairs, maintenance and operation of these works, making a total of \$87,571,498.16.\* The total revenue derived, including tolls, and rentals of lands and water-powers, amounted to \$11,710,240.08. (See the accountant's statements, Part II., p. 28.)

The total expenditure for the fiscal year ended on the 30th of June, 1898, was as follows : on construction and enlargement a total of \$3,207,249.79, and a further sum of \$624,755.96 for repairs, renewals, and operation, making a total for the year of \$3,832,005.75.

The total net revenue for the fiscal year was \$407,662.81, an increase compared with the net revenue of the previous year of \$22,882.28. The net canal tolls amounted to \$344,057.13, an increase of \$22,429.80, and the rents received to \$44,050.39, a decrease of \$549.25.

The total expenditure on canal staff and maintenance, repairs, and renewals amounted for the year to \$624,755.96, a decrease of \$8,520.20 ; and the total net receipts amounting, as above, to \$407,662.81, the amount of expenditure in excess of receipts was \$217,093.15, compared with an excess expenditure the previous year of \$248,495.63.

The above figures relate to the *fiscal year* 1897-98, but very voluminous statistics relating to the canal traffic, and various commercial statistics for the *season of navigation* of the year 1897 will be found in Part V., "Canal Statistics."

The following features of the principal canal traffic during the *season of navigation* of 1897 will be of interest :—

On the Welland Canal, 1,274,292 tons of freight were moved, a decrease of 5,695 tons ; of which 824,485 tons were agricultural products, an increase of 31,123 tons, and 181,817 tons produce of the forest. 1,050,093 tons passed eastward and 224,199 westward : 1,244,750 tons were through freight, of which 1,026,458 tons passed eastward.

Of this through freight Canadian vessels carried 345,977 tons, an increase of 4,847 tons, and United States vessels 898,773 tons, a decrease of 3,692 tons.

The total freight passed eastward and westward through this canal from United States ports to United States ports was 564,694 tons, a decrease of 88,519 tons compared with the year 1896.

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\* These figures are the aggregate expenditures on specific canals and do not comprise certain items charged to "Canals in general."



The quantity of grain passed down this and the St. Lawrence canals to Montreal was 560,254 tons, an increase of 99,205 tons compared with the previous year ; of this 89,659 tons were transhipped at Ogdensburg, as against 461,049 tons carried down in 1896, of which 77,355 tons were transhipped at Ogdensburg. The further quantity of 43,023 tons of grain passed down the St. Lawrence Canals only, to Montreal, making the total 603,277 tons.

The rate of toll on grain for passage through the Welland (giving free passage through the St. Lawrence canals) was 10c. a ton.

On the St. Lawrence canals 1,231,365 tons of freight were moved, an increase of 117,675 tons ; of which 813,638 were east bound through freight, and 23,831 tons west bound through freight ; 746,537 tons were agricultural products, 331,620 tons merchandise, and 94,496 tons forest products.

Seven cargoes of grain, aggregating 2,324 tons, were taken down direct to Montreal through the Welland and St. Lawrence canals.

On the Ottawa River canals the total quantity of freight moved was 562,370 tons, an increase of 60,324, of which 551,700 tons were produce of the forest.

On the Chambly Canal 352,136 tons were moved, an increase of 7,201, of which 237,653 tons were the product of the forest

On the Rideau Canal 77,276 tons were carried, an increase of 3,969, 47,010 tons being the product of the forest.

On the St. Peter's Canal 67,093 tons were carried, an increase of 1,585, of which 50,013 tons were merchandise.

On the Murray Canal 13,231 tons passed, an increase of 175, and 5,467 tons of this were the product of the forest.

On the Trent Valley Canal 36,141 tons were moved, of which 35,294 tons were product of the forest.

On the Sault Ste. Marie Canal the total movement of freight was 4,947,063 tons, an increase of 369,664 tons, carried in 4,268 vessels, the number of lockages being 2,604. Of wheat 17,924,802 bushels, and of other grain 3,253,405 bushels were carried ; 1,093,456 barrels of flour, also 3,572,854 tons of iron ore and 7,799,156 feet, board measure, of lumber ; all these items show a considerable decrease. The total traffic at this point, accommodated by the two canals, the American and Canadian, amounted to 18,986,689 tons, an increase of 1,730,266 tons, carried in 17,080 vessels, a decrease of 1,497. The total quantity of wheat carried was 55,931,779 bushels, a decrease of 7,532,097, and of other grain 24,968,136, a decrease of 2,747,129. Of lumber the total was 802,240,156 feet, board measure, an increase of 113,366,356.

As having an interesting bearing on the question of canal *versus* railway transport of grain from the west, it may be noted that whereas grain and pease passed down to Montreal through the St. Lawrence canals to the extent of 560,254 tons, an increase of 64,386 tons over the previous year, the quantity carried to Montreal via the Canadian Pacific and Grand Trunk Railways amounted to 228,586 tons, an increase of 74,869

## Department of Railways and Canals.

tons. The quantity of grain carried to tide-water on the New York State canals was 569,362 tons, a decrease of 183,677 tons, while the quantity carried by the railways of the State to tide-water amounted to 4,132,740 tons, an increase of 267,980 tons.

Of the total freight carried by the canals and railways of the State of New York, respectively, (amounting in 1897 to 43,711,512 tons—less by 44,539 tons than in 1896) the proportion carried by the canals has fallen steadily from 68·9 per cent in 1859 and 47·0 per cent in 1869 to 8·3 per cent in 1897.

The results which may follow on the approaching completion of the enlarged system of Canadian canals remain to be seen.

In the report of the Chief Engineer, and in the reports of the superintending engineers, will be found full details as to the operation of the various canals, and as to the progress and position of the works of enlargement and construction now being carried on.

The department is strenuously endeavouring to secure the completion of the enlarged canal systems on the River St. Lawrence to such extent as to admit of their use during the season of 1899.

It has to be observed that the Chief Engineer lays emphasis on the fact that though the dimensions of the enlarged locks are :—length 270 feet, width 45 feet, with 14 feet of water on the sills, the length of the vessels to be accommodated is limited to 255 feet.

I have the honour to be, sir,

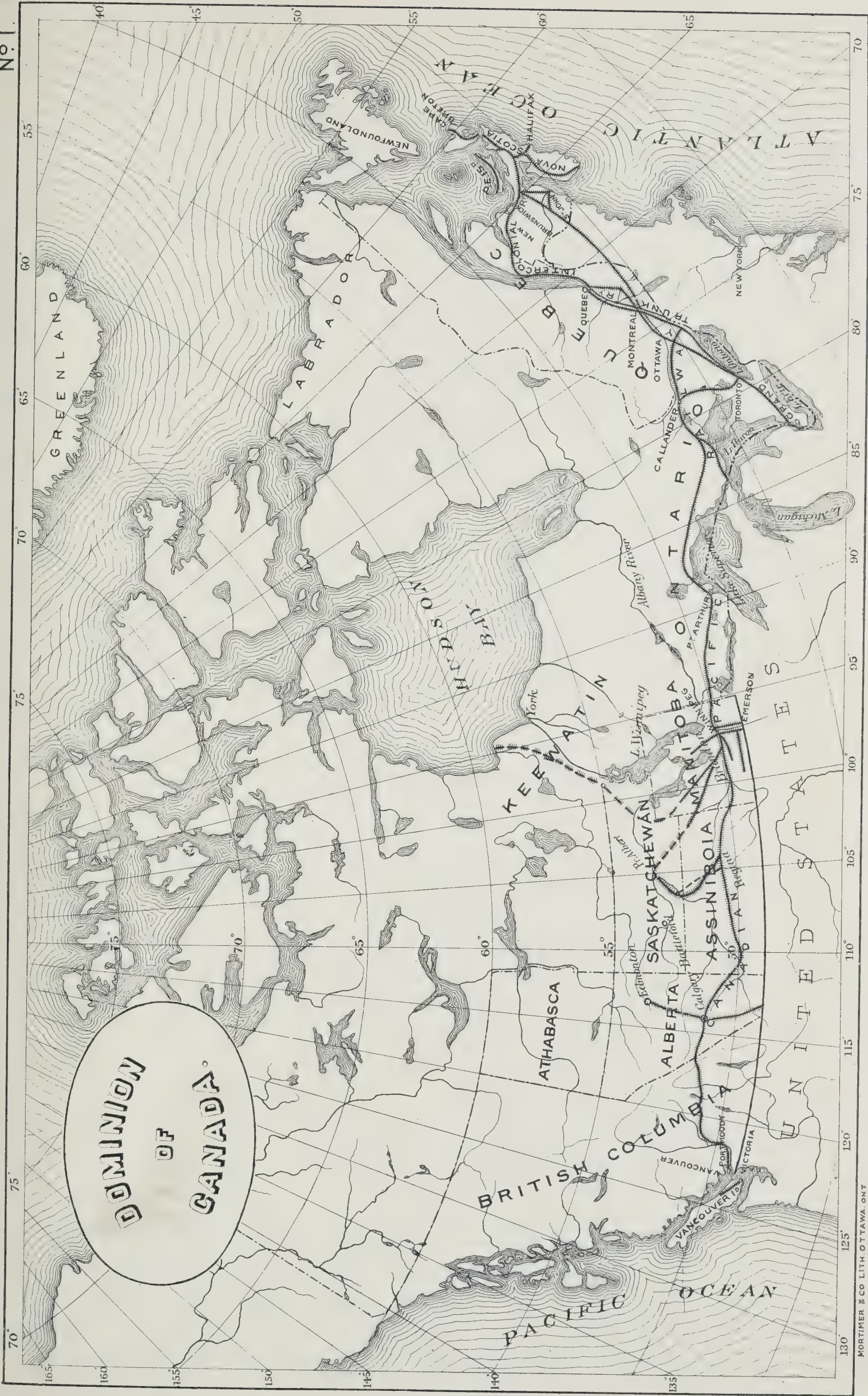
Your obedient servant,

COLLINGWOOD SCHREIBER,

*Deputy of the Minister of Railways and Canals.*







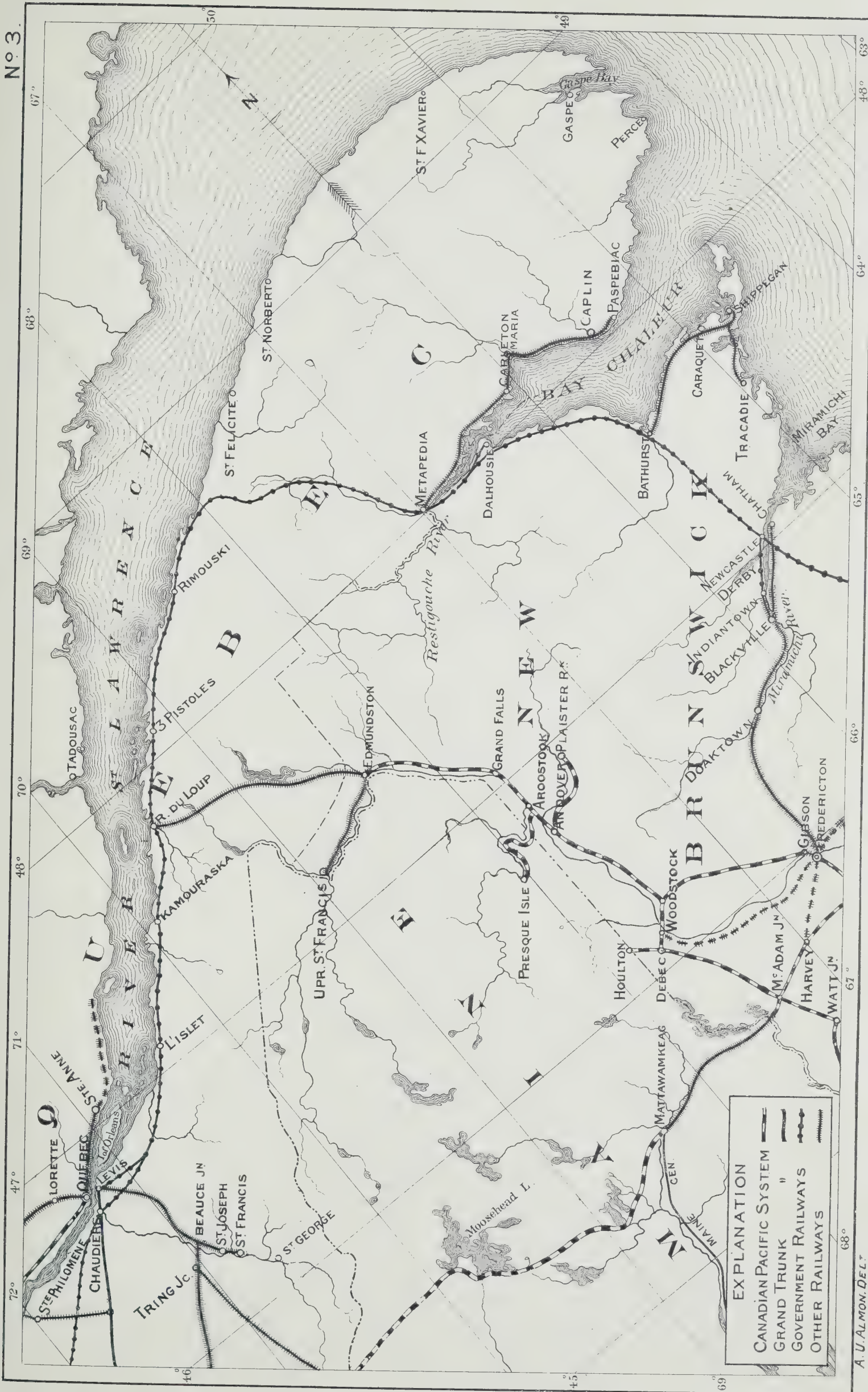






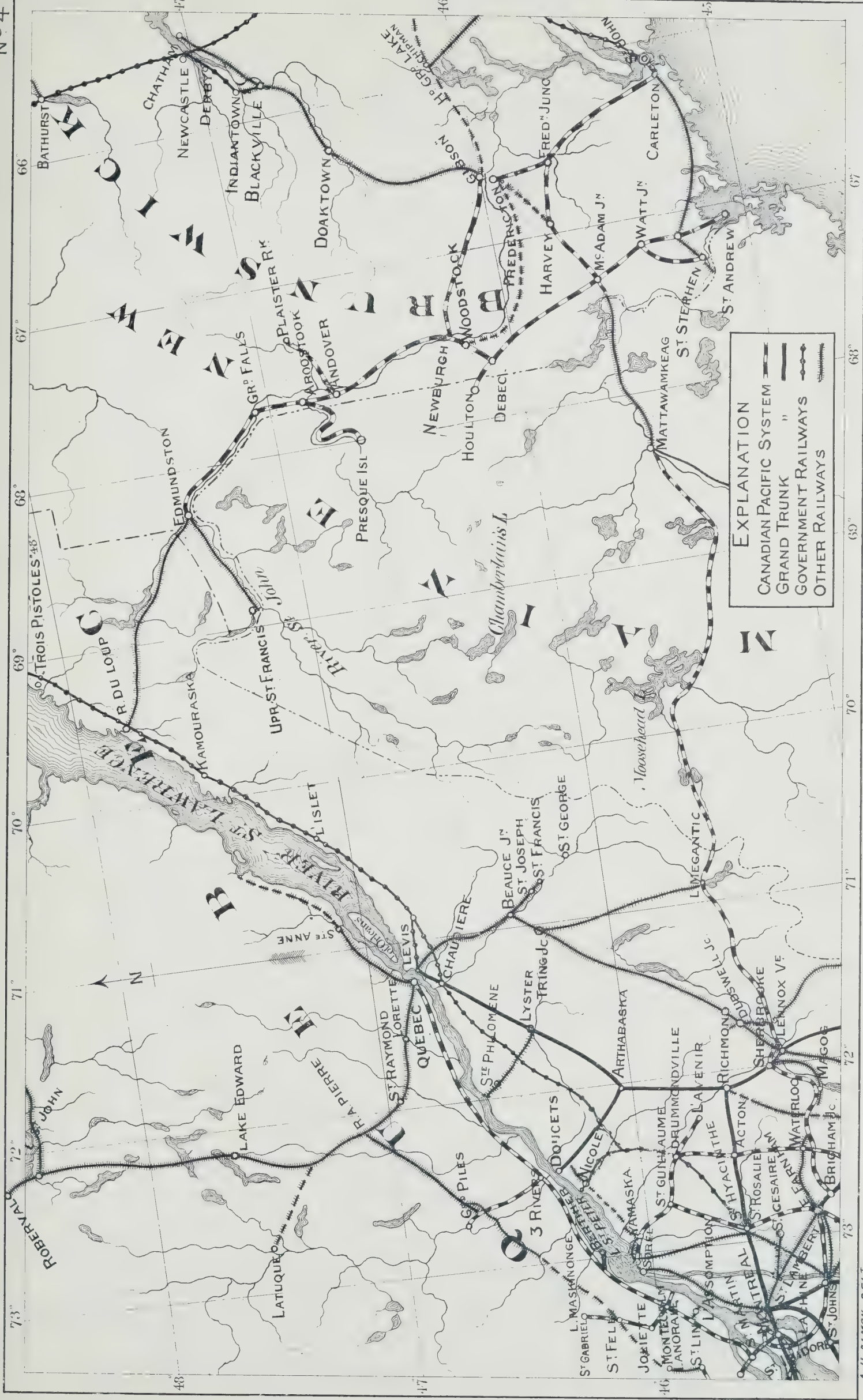










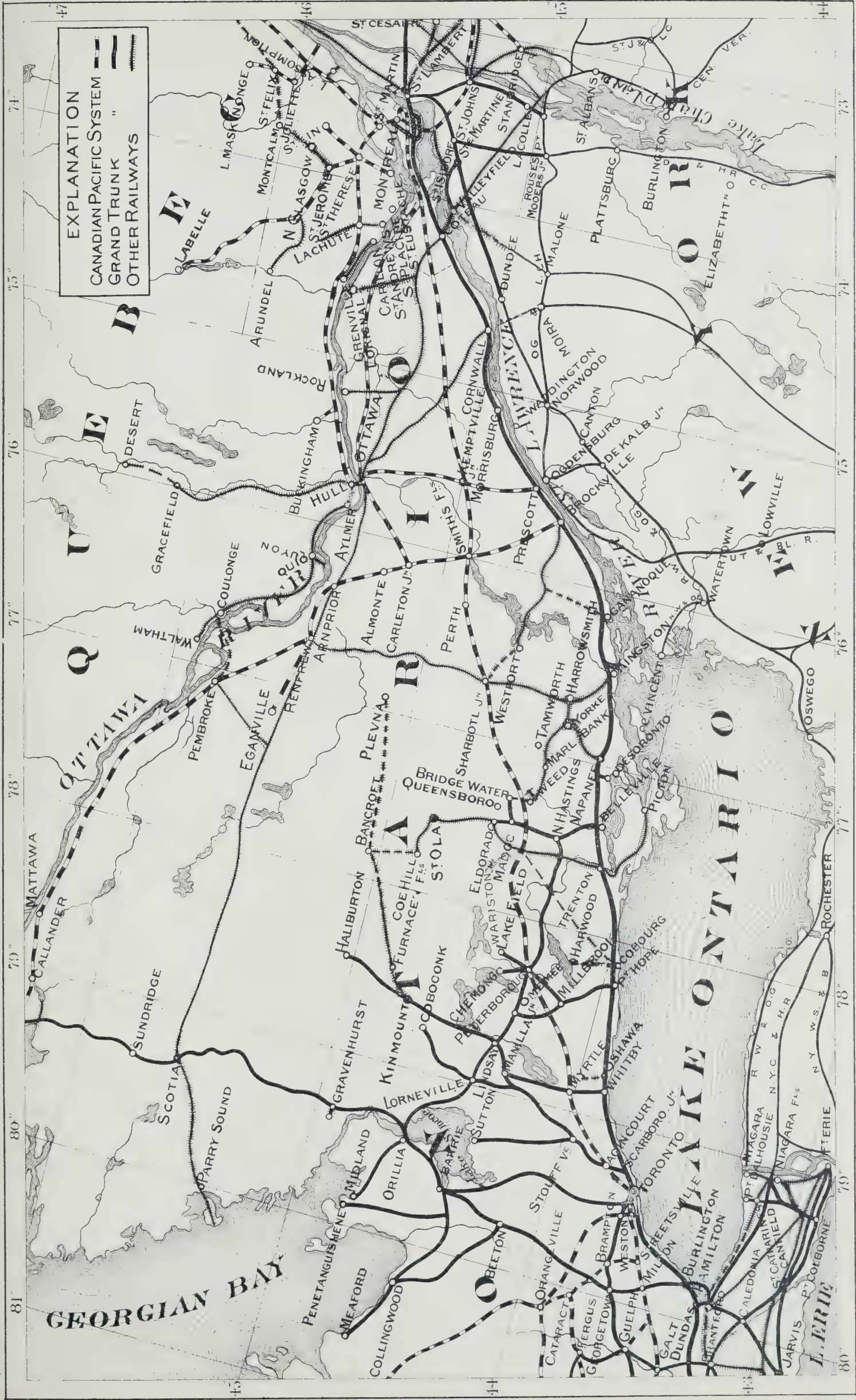


**EXPLANATION**

- CANADIAN PACIFIC SYSTEM
- GRAND TRUNK
- GOVERNMENT RAILWAYS
- OTHER RAILWAYS

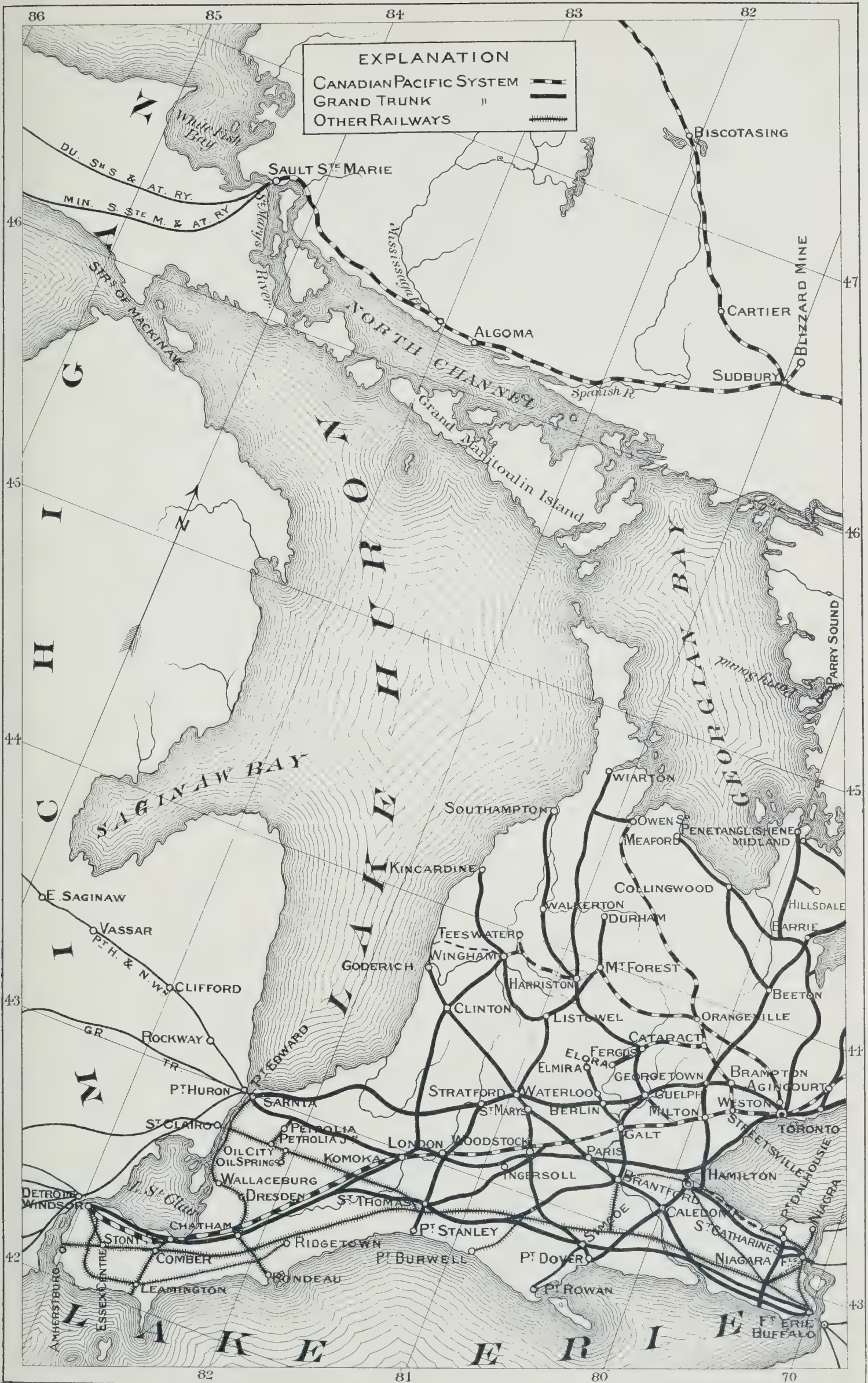






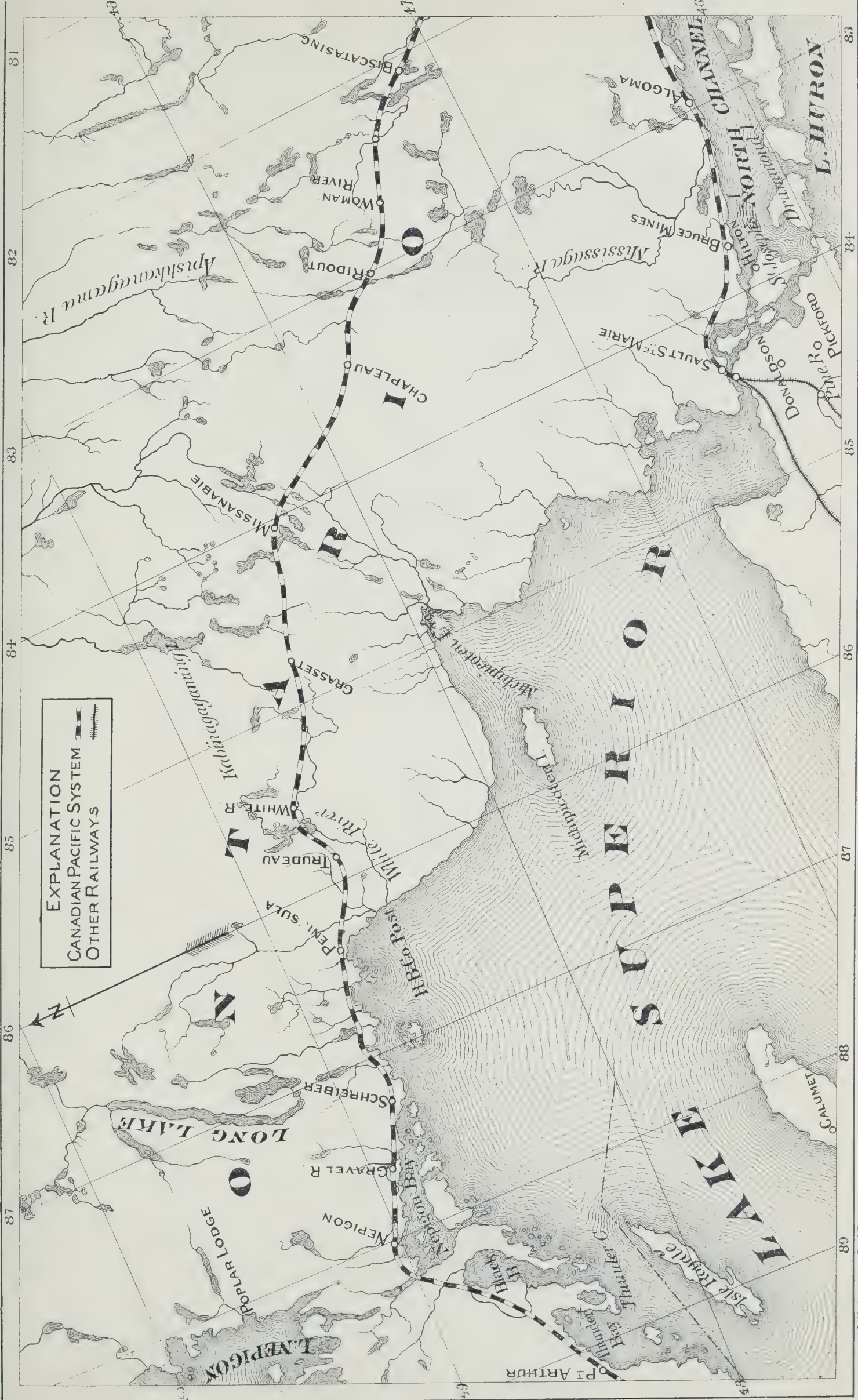






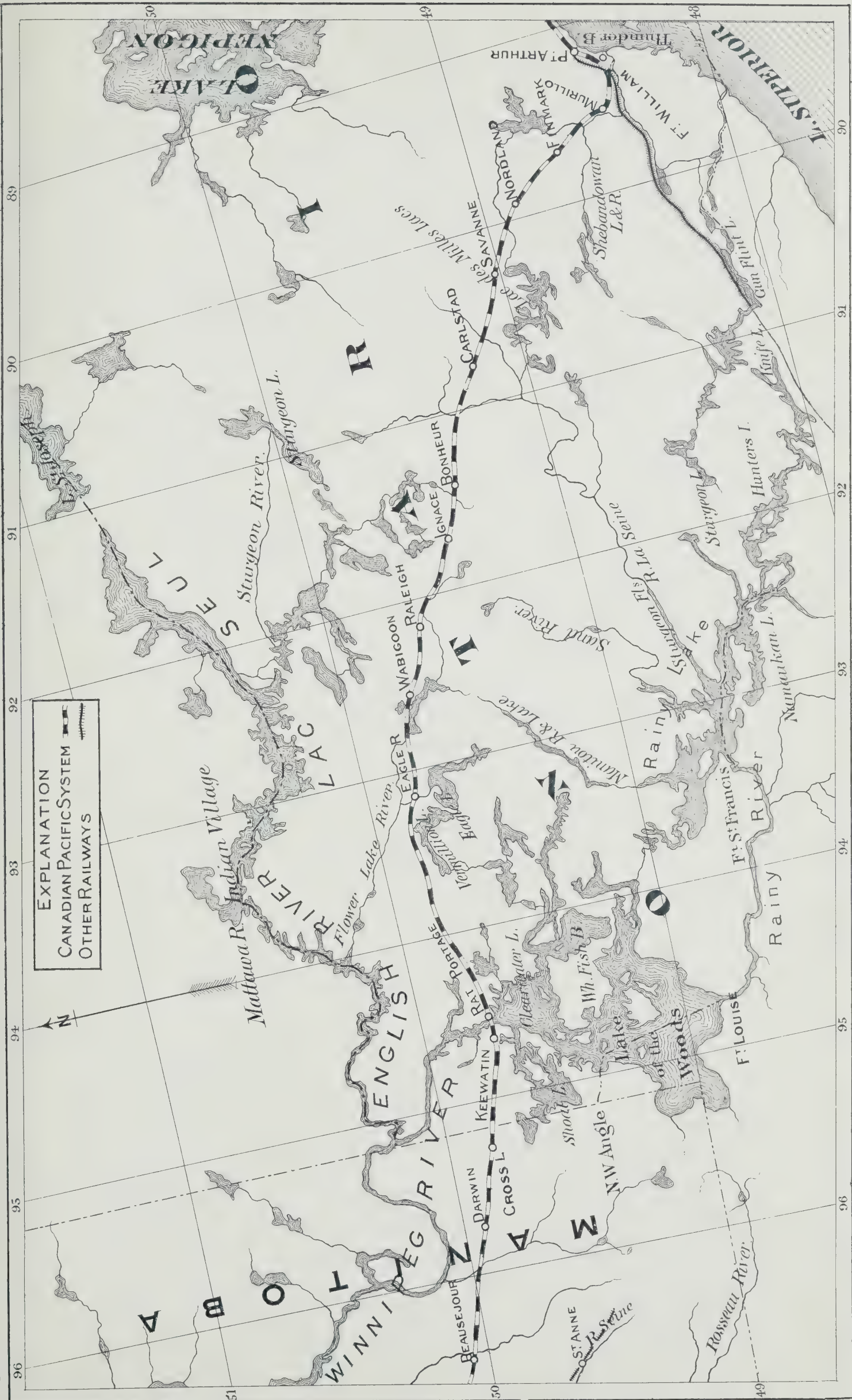






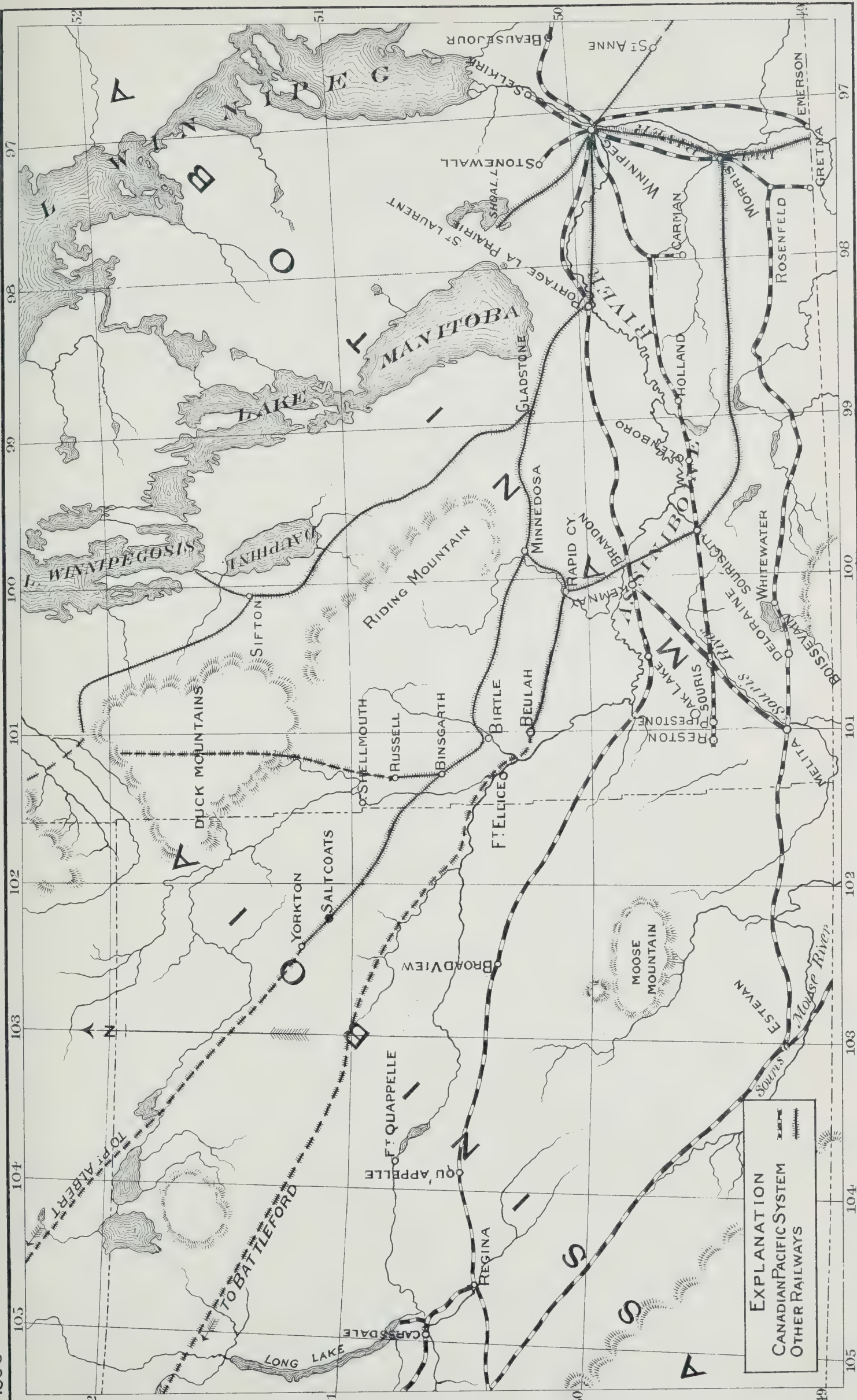






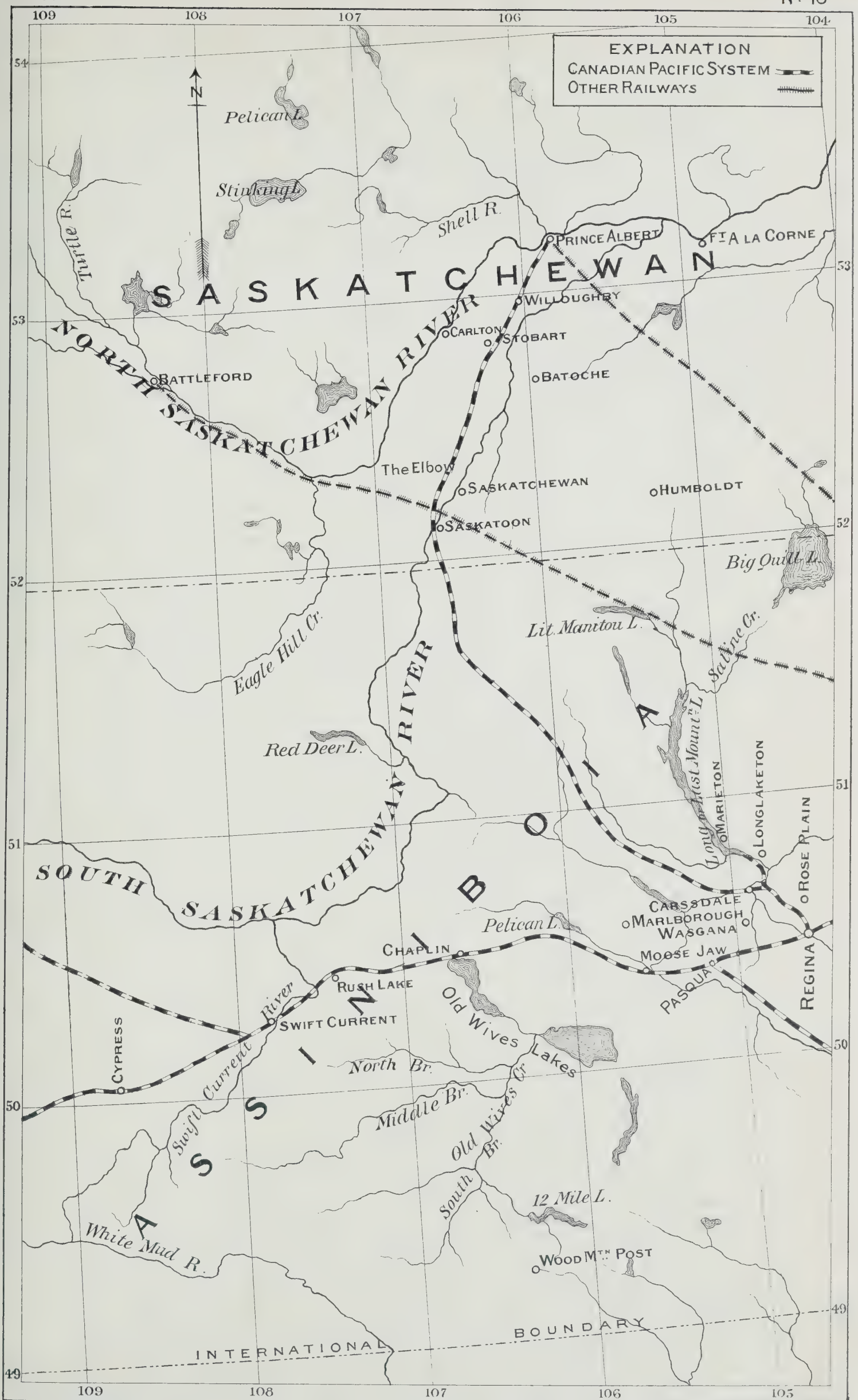




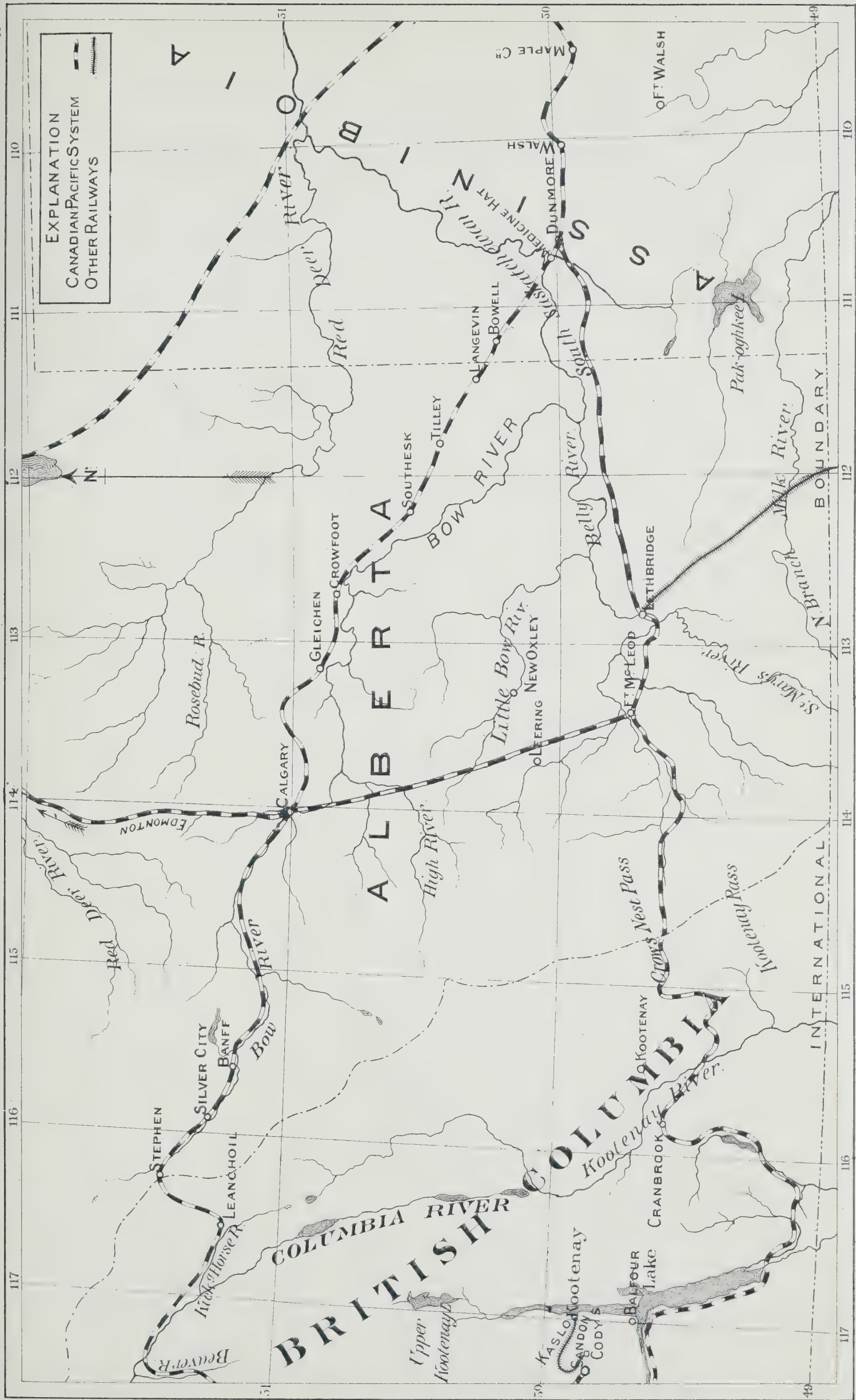






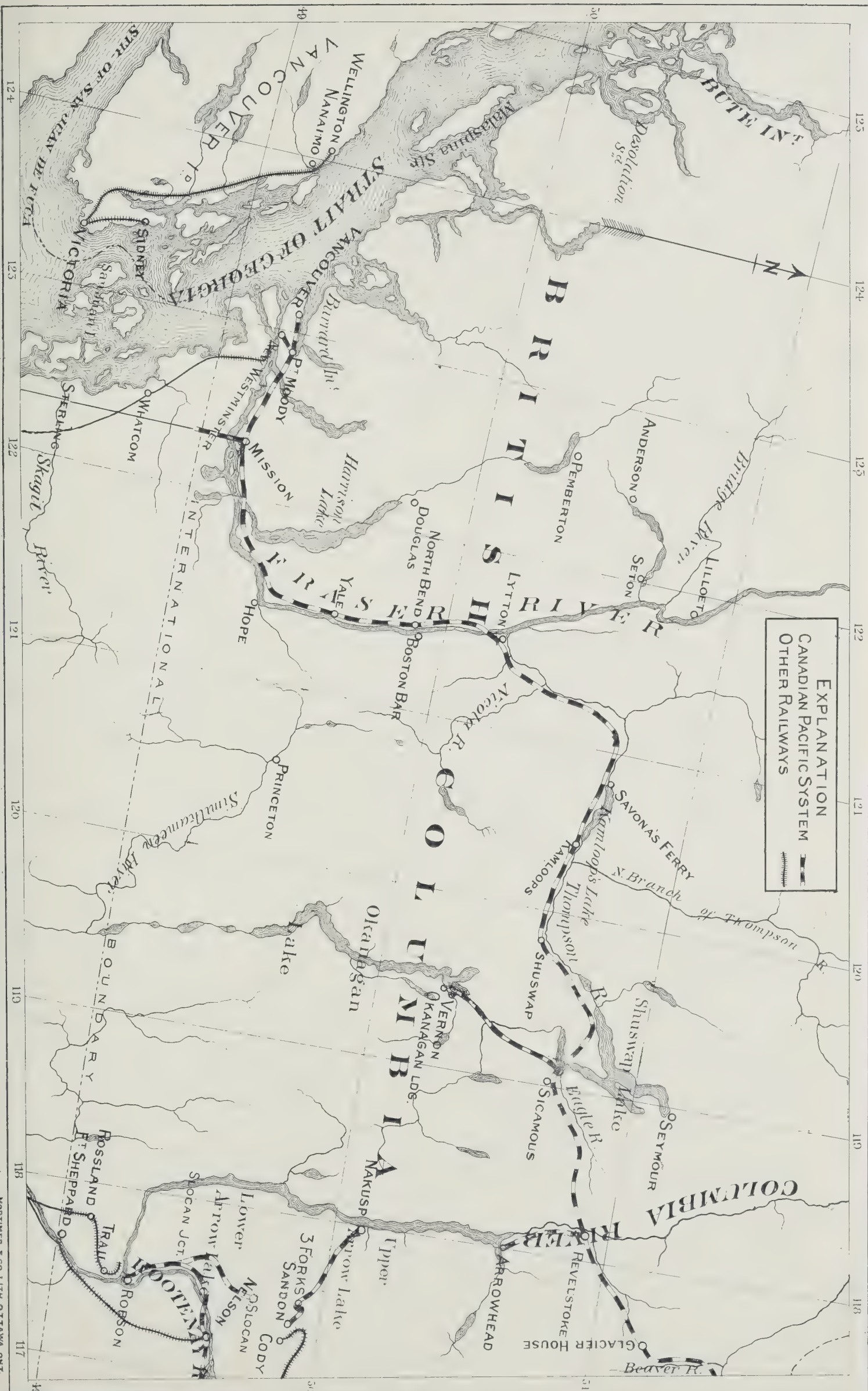


















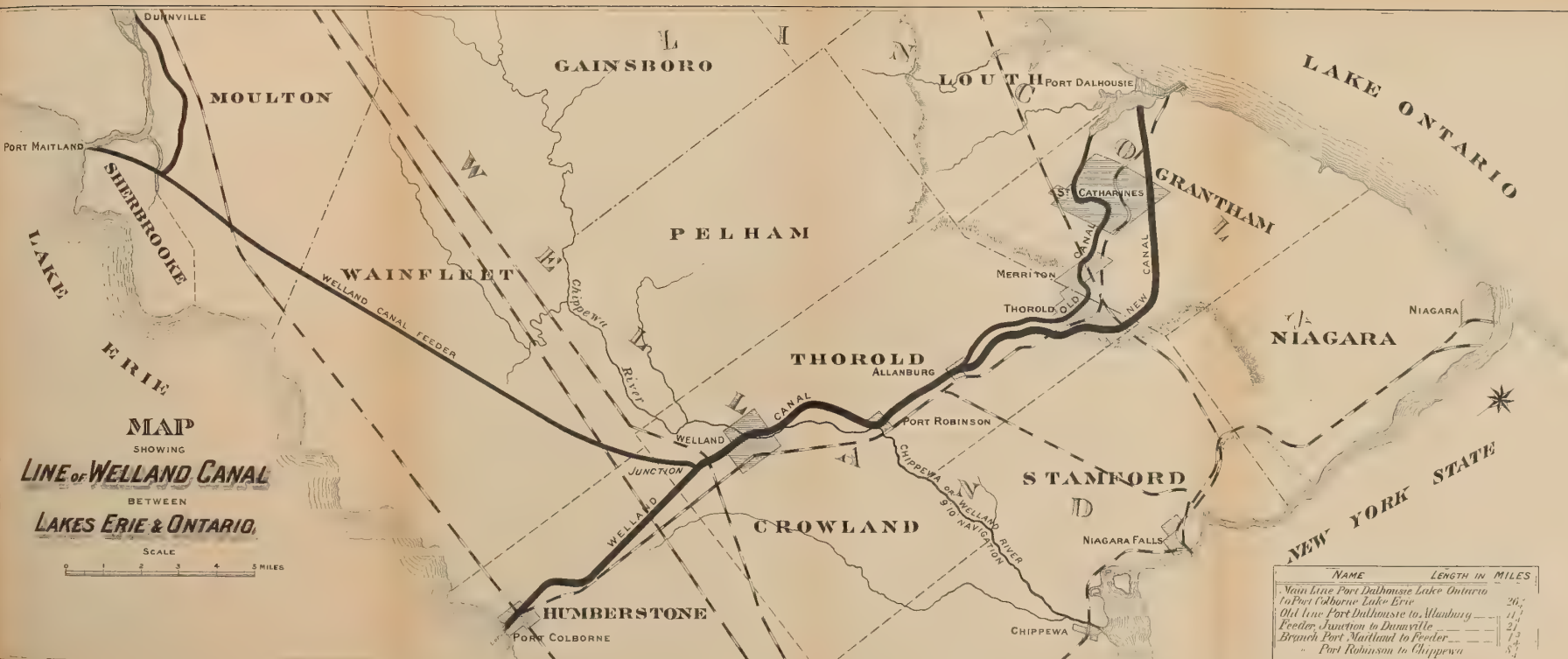
NAME	MILES
Lachine Canal	8 1/2
Beauharnois Canal	14
Soulanges Canal	14 1/2
Cornwall Canal	11 1/2
Ferris P <sup>re</sup> Canal	4
Rapide Plat Canal	7 1/2
Galops Canal	12
Chambly Canal	8
S <sup>te</sup> Ours Lock	8
S <sup>te</sup> Annes Lock	10
Carillon & Grenville Canal	126 1/2
Rideau Navigation	6
Perth Branch	6

MAP  
SHOWING THE  
ST. LAWRENCE, OTTAWA, RIDEAU,  
AND  
RICHELIEU CANALS.

Scale 10 Miles - one Inch

Note: Soulanges Canal, under Construction





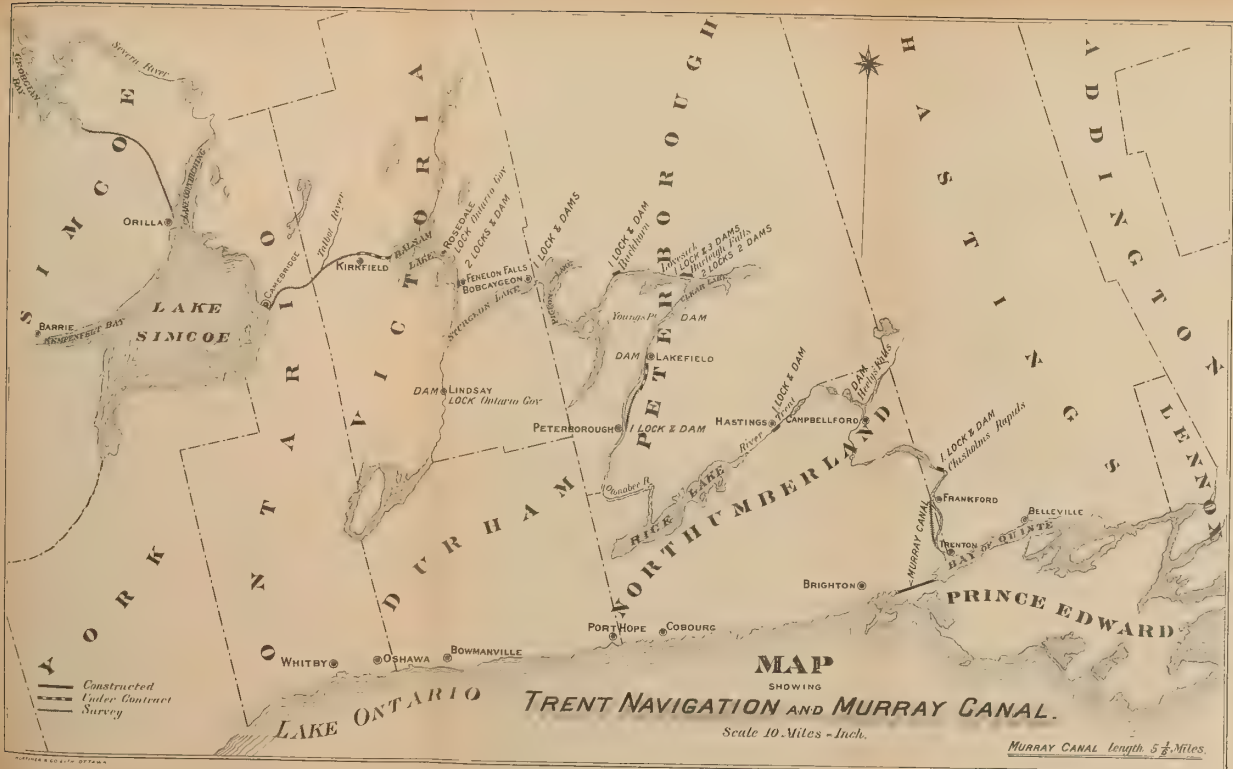
MAP  
SHOWING  
**LINE OF WELLAND CANAL**  
BETWEEN  
**LAKES ERIE & ONTARIO.**



NAME	LENGTH IN MILES
Main Line Port Dalhousie Lake Ontario to Port Colborne Lake Erie	26.4
Old Line Port Dalhousie to Allandburg	11.4
Feeder Junction to Dunnville	2.7
Branch Port Maitland to Feeder	1.2
Port Robinson to Chippewa	8.4







**MAP**

SHOWING

**TRENT NAVIGATION AND MURRAY CANAL.**

Scale 10 Miles - Inch.

MURRAY CANAL length  $5\frac{1}{2}$  Miles.





**MAP**  
SHOWING  
**CANADIAN SHIP CANAL**

ALSO  
ST MARY'S FALLS CANAL MICH. U.S.A.

SCALE OF FEET

0 1000 2000

PACIFIC  
RAILROAD

CANADIAN

TOWN OF SAULT STE MARIE

CANADIAN SHIP CANAL

WHITE ISLAND

ST MARY'S RAPIDS

INTERNATIONAL BRIDGE

ST MARY'S FALLS CANAL



Department of Railways and Canals.

PART I

SKETCH MAPS OF DOMINION RAILWAYS AND CANALS

ALSO INFORMATION AS TO

TRANSCONTINENTAL RAILWAY COMMUNICATION AND AS TO  
ROUTES OF CANAL NAVIGATION

AND

REPORT OF THE CHIEF ENGINEER

COMPRISING REPORTS OF

GENERAL MANAGER OF GOVERNMENT RAILWAYS AND SUPERINTENDENTS OF CANALS

ALSO

DECISIONS OF THE RAILWAY COMMITTEE OF THE PRIVY COUNCIL





## Department of Railways and Canals.

### CANADIAN TRANSCONTINENTAL RAILWAY COMMUNICATION.

#### HALIFAX OR ST. JOHN TO MONTREAL.

The routes available between Halifax and Montreal are four in number; in all of which the Intercolonial is used, either in whole or in part, as follows: (the names adopted are those of the dominating roads):—

##### Intercolonial Railway Route—

	Miles.
By Intercolonial Railway to Point Lévis .....	675
do do Lévis to Montreal.....	173
	—— 848

(Or by ferry across the St. Lawrence to Quebec, thence by North Shore Railway, C.P.R., also 173 miles.)

##### Canadian Pacific Railway Route—

By Intercolonial Railway to St. John, N.B. ....	275
New Brunswick Railway and Maine Central Railway to Mattawamkeag .....	146
Canadian Pacific Railway to Montreal .....	334
	—— 775

##### Grand Trunk Railway Route—

By Intercolonial Railway to St. John, N.B. ....	275
New Brunswick Railway .....	90
Maine Central Railway .....	224
	——
Total up to Danville Junction .....	589
By Grand Trunk Railway to Montreal.....	270
	—— 859

##### Témiscouata Railway Route—

By Intercolonial Railway to St. John, N.B. ....	275
New Brunswick Railway to Edmundston .....	170
Témiscouata Railway to Rivière du Loup.....	81
Intercolonial Railway to Montreal .....	282
	—— 808

MONTREAL TO THE PACIFIC COAST, CANADIAN PACIFIC RAILWAY.

Trunk Line.

	Miles.
Quebec to St. Martin's Junction (13 miles north of Montreal).	159
Montreal (at head of Atlantic Ocean Navigation to St. Martin's Junction) .....	13
St. Martin's Junction to Callander.....	331
Callander to Port Arthur .....	649
Port Arthur to Red River (opposite Winnipeg) .....	428
Red River to Savona's Ferry .....	1,257
Savona's Ferry to the waters of the Pacific Ocean at Port Moody.....	213
	—2,547
Port Moody to Vancouver .....	15
Total, Montreal to Vancouver.....	2,906

This railway was opened for through traffic on the 28th of June, 1886.

INTERCOLONIAL RAILWAY.

The Intercolonial Railway touches six Atlantic Ocean ports, namely Pointe du Chêne, Pictou, Halifax, St. John, Sydney and North Sydney. Connection is made with the Grand Trunk Railway at Chaudière Junction and with the Canadian Pacific Railway at Quebec (by ferry from Lévis) and also with both these roads at Montreal.

The total length of the road operated for the 8 months ended 28th February was 1,145 miles, to which is to be added for the line from Chaudière to Montreal and the Nicolet Branch, 169·81 miles, making a total of 1,314·81 miles, and for freight branches 12½ miles, making a total of 1,327·31 miles.

The following are the through distances :—

	Miles.
Lévis (opposite Quebec) via St. Joseph and St. Charles Junction (14 miles) to Halifax.....	675
Lévis to St. John.....	578
Lévis via Truro { to Sydney .....	827
{ to North Sydney.....	820

NOTE.—At Montreal the passengers make connection with the Canadian Pacific Railway and with the Grand Trunk Railway also at Lévis. Freight is carried direct along the old main line between Chaudière Junction and St. Charles Junction (17 miles), instead of round by Lévis to St. Charles Junction, a total distance of 24 miles, thence to Montreal.

WINDSOR BRANCH.

This road is 32 miles in length. It extends from Windsor Junction, on the Intercolonial Railway, to Windsor.



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### PRINCE EDWARD ISLAND RAILWAY.

#### LENGTH OF LINE.

	Miles.
Souris to Tignish.....	168
Mount Stewart to Georgetown.....	24
Charlottetown to Royalty Junction.....	5
Emerald Junction to Cape Traverse.....	13
Alberton to Cascumpec Wharf .....	1
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Communication between the Prince Edward Island Railway and the Intercolonial is afforded in summer by steamer between Summerside and Pointe du Chêne, between Charlottetown and Pictou, and between Georgetown and Pictou, and in winter by specially-built steamers between Georgetown and Pictou and between Charlottetown and Pictou; there is also further provision made for communication by iceboats from Cape Traverse. These cross the Strait to Cape Tormentine, on the mainland, a distance of about 9 miles. Here, by the line of New Brunswick and Prince Edward Railway, about 40 miles in length, connection is made with the Intercolonial Railway at Sackville. This winter service across the Straits is conducted by the Marine Department, the mails being taken to and met at Cape Traverse by special trains, whenever required by the Post Office Department.

### CANALS.

The canal systems of the Dominion, under Government control, in connection with lakes and navigable rivers, are as follow:—

1. The River St. Lawrence.
2. The Welland Canal.
3. The Sault Ste. Marie Canal.
4. The Richelieu navigation, from the St. Lawrence to Lake Champlain.
5. The River Ottawa.
6. The Rideau navigation, from Ottawa to Kingston.
7. The Trent navigation.
8. St. Peter's Canal, Cape Breton.

#### RIVER ST. LAWRENCE AND LAKES.

The River St. Lawrence, with the system of canals established on its course above Montreal, and the Lakes Ontario, Erie, St. Clair, Huron and Superior, with connecting canals, afford a course of water communication extending from the Straits of Belle Isle to Port Arthur, at the head of Lake Superior, a distance of 2,260 statute miles. The distance to Duluth is 2,384 miles.

From the Straits of Belle Isle at the mouth of the St. Lawrence to Montreal the distance is 986 miles. From Quebec to Montreal the distance is 160 miles. Owing to the shallowness of the waters on a portion of the river between these two places, particularly through Lake St. Peter, vessels drawing more than from ten to twelve feet were formerly barred from passage for the greater part of the season of navigation. In

1826, the question of deepening the channel was first definitely mooted, but it was not until 1844 that any dredging operations were begun. In that year, the deepening of a new straight channel was commenced, but the scheme was abandoned in 1847. In 1851, the deepening of the present channel was begun. At that time the depth of the channel at low water was 10 feet 6 inches. By the year 1869, this depth had been increased to 20 feet, by 1882, to 25 feet, and by the close of 1888 the depth of  $27\frac{1}{2}$  feet, at low water, was attained for a distance of 108 miles from Montreal to a point within tidal influence. This work is now being continued by the Government of Canada, which in 1888, under the provisions of the Act 51 Vic., ch. 5, of that year, assumed the indebtedness incurred. The channel has a minimum width of 300 feet, extending to 550 feet at points of curvature. The channel is lighted and buoyed.

Navigation, which is closed by ice during the winter months, opens about the end of April.

Montreal has by this work been placed at the head of ocean navigation, and here the canal systems of the River St. Lawrence begin, overcoming the various rapids by which the river channel upwards is obstructed, and giving access, through the St. Lawrence Canals, the Welland Canal, the Great Lakes, and the Sault Ste. Marie Canal, to the head of Lake Superior.

The difference in level between the point on the St. Lawrence near Three Rivers where tidal influence ceases, and Lake Superior, is about 600 feet.

The Dominion canals, constructed between Montreal and Lake Superior, are the Lachine, Beauharnois, Cornwall, Farran's Point, Rapide Plat, Galops, Welland and Sault Ste. Marie. Their aggregate length is 71 miles; total lockage (or height directly overcome by locks) 551 feet. The number of locks through which a vessel would pass in its passage from Montreal, at the head of ocean navigation, to the head of Lake Superior is 51. This number will be reduced on the completion of the Soulanges Canal, which will take the place of the Beauharnois Canal, the latter will be abandoned for navigation purposes.

Communication between Lakes Huron and Superior is obtained by means of the Canadian Sault Ste. Marie Canal, and also by the St. Mary's Falls Canal, situated on the United States side of the River St. Mary. Both these canals are free of toll.

It is important to note that the enlargement of the canals on the main route between Montreal and Lake Erie comprises locks of the following minimum dimensions:—Length 270 feet, width 45 feet, depth of water on sills 14 feet. *The length of the vessels to be accommodated is limited to 255 feet.* At Farran's Point, in the canal of that name, the lock is 800 feet long. A similar lock is built at Iroquois, on the Galops Canal, the object being to pass a full tow at one lockage.

#### LACHINE CANAL.

Length of canal .....	8 $\frac{1}{2}$ statute miles.
Number of locks. ....	5
Dimensions of locks .....	270 feet by 45 feet.
Total rise, or lockage .....	45 “
Depth of water { at two locks .....	18 “
{ at three locks .....	14 “
Mean width of new canal .....	150 “



## Department of Railways and Canals.

The old lift locks, 200 feet by 45 feet, are still available with 9 feet of water on mitre sills.

The depth of the canal between locks is now adapted to vessels of 14 feet draught.

The canal consists of one channel, with two distinct systems of locks, the old and the enlarged. The old locks are 200 feet by 45 feet. There are two lock entrances at each end.

The canal extends from the city of Montreal to the town of Lachine, overcoming the St. Louis Rapids, the first of the series of rapids which bars the ascent of the River St. Lawrence. They are 986 miles distant from the Straits of Belle Isle.

### BEAUHARNOIS CANAL.

Length of canal.....	11 $\frac{1}{4}$ statute miles.
Number of locks.....	9
Dimensions of locks.....	200 feet by 45 feet.
Total rise or lockage.....	82 $\frac{1}{2}$ "
Depth of water on sills.....	9 "
Breadth of canal at bottom.....	80 "
Breadth of canal at water surface.....	120 "

This canal commences on the south side of the St. Lawrence, 15 $\frac{1}{4}$  miles from the head of the Lachine Canal. It connects Lakes St. Louis and St. Francis, and passes the three rapids known, respectively, as the Cascades, the Cedars and the Coteau.

It is expected that the Soulanges Canal, which is being built on the enlarged scheme on the north side of the river, will be completed by next spring, when the Beauharnois Canal will be abandoned for navigation purposes and the Soulanges substituted therefor.

### CORNWALL CANAL.

Length of canal.....	11 statute miles.
Number of locks.....	6
Dimensions of locks.....	270 by 45 feet.
Total rise or lockage.....	48 feet.
Depth of water on sills.....	14 "
Breadth of canal at bottom.....	100 "
Breadth of canal at water surface.....	164 "

The old lift locks, 200 feet by 45 feet, are also available with 9 feet of water on the mitre sills.

From the head of the Beauharnois to the foot of the Cornwall Canal there is a stretch, through Lake St. Francis, of 32 $\frac{3}{4}$  miles, which is being made navigable for vessels drawing 14 feet.

The Cornwall Canal extends past the Long Sault Rapids from the town of Cornwall to Dickenson's Landing.



WILLIAMSBURG CANALS.

The Farran's Point, Rapide Plat, and Galops Canals are collectively known as the Williamsburg Canals.

FARRAN'S POINT CANAL.

Length of canal..... ..	1 mile.
Number of locks..... ..	1
New lock..... ..	800 feet by 45 feet.
Old lock..... ..	200 " 45 "
Total rise or lockage..... ..	3½ "
Depth of water on sills of new lock at ordinary water level.... ..	14 "
Depth of water on sills of old lock at ordinary water level..... ..	9 "
Breadth of canal at bottom..... ..	90 "
Breadth of canal at water surface..... ..	154 "

From the head of the Cornwall Canal to the foot of Farran's Point Canal, the distance on the River St. Lawrence is 5 miles. The latter canal enables vessels ascending the river to avoid the Farran's Point rapid, passing the full tow at one lockage. Descending vessels run the rapids with ease and safety.

RAPID PLAT CANAL.

Length of canal..... ..	3⅔ miles.
Number of lock..... ..	2
Dimensions of locks..... ..	270 feet by 45.
Total rise or lockage..... ..	11½ "
Depth of water on sills. .... ..	14 "
Breadth of canal at bottom..... ..	80 "
Breadth of canal at surface of water..... ..	152 "

The old lift lock 200 feet by 45 is also available with 9 feet water on mitre sills. From the head of Farran's Point Canal to the foot of Rapide Plat Canal there is a navigable stretch of 10½ miles. This canal was formed to enable vessels ascending the river to pass the rapids at that place. Descending vessels run the rapids safely.

GALOPS CANAL.

Length of canal..... ..	7⅓ miles.
Number of locks..... ..	3
Dimensions of locks..... ..	{ 2—270 by 45. 1—800 by 45.
Total rise or lockage..... ..	15½ feet.
Depth of water on sills .... ..	14 "
Breadth of canal at bottom..... ..	80 "
Breadth of canal at surface of water..... ..	144 "

The old lock 200 feet by 45 is also available with 9 feet water on mitre sill. From the head of Rapide Plat Canal to Iroquois, at the foot of the Galops Canal, the St. Lawrence is navigable for 4½ miles. This canal enables vessels to overcome the rapids at Pointe aux Iroquois, Point Cardinal and the Galops.

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MURRAY CANAL.

Length between eastern and western pier heads..... 5½ miles.  
Breadth at bottom..... 80 feet.  
Breadth at water surface .....120 “  
Depth below lowest known lake level..... 11 “  
No locks.

This canal extends through the Isthmus of Murray, giving connection westward between the head waters of the Bay of Quinté and Lake Ontario, and thus enabling vessels to avoid the open lake navigation.

WELLAND CANAL.

MAIN LINE FROM PORT DALHOUSIE, LAKE ONTARIO, TO PORT COLBORNE, LAKE ERIE.

	Old Line.	Enlarged or New Line.
Length of canal. . . . .	27½ miles.	26¾ miles.
Pairs of guard-gates (formerly 3). . . . .	26	2
Number of locks { lift. . . . .	1	lift 25
guard . . . . .	1	guard 1
Dimensions. . . . .	1 lock 200 x 45 1 “ 200 x 45 1 (tidal) 230 x 45 24 locks 150 x 45	270 feet x 45 feet.
Total rise or lockage. . . . .	326¾ feet.	326¾ feet.
Depth of water on sills. . . . .	10¼ feet.	14 “

WELLAND RIVER BRANCHES.

Length of canal—Port Robinson Cut to River  
Welland..... 2,622 feet.  
“ From the Canal at Welland,  
to the river, via lock at  
aqueduct. . . . . 300 “  
Chippawa Cut to River Nia-  
gara..... 1,020 “  
Number of locks—one at aqueduct and one at  
Port Robinson..... 2  
Dimensions of locks..... 150 by 26½ feet.  
Total lockage from the canal at Welland down  
to River Welland ..... 10 feet.  
Depth of water on sills ..... 9 feet 10 inches.

GRAND RIVER FEEDER.

Length of canal..... 21 miles.  
Number of locks ..... 2  
Dimensions of locks..... { 1 of 150 by 26½ feet.  
1 of 200 by 45 “  
Total rise or lockage ..... 7 to 8 feet.  
Depth of water on sills..... 9 feet.

PORT MAITLAND BRANCH.

Length of canal.....	1 $\frac{3}{4}$ miles.
Number of locks.....	1
Dimensions of locks.....	185 by 45 feet.
Total rise or lockage.....	7 $\frac{1}{2}$ feet.
Depth of water on sills.....	11 “

The Welland Canal has two entrances from Lake Ontario, at Port Dalhousie, one for the old, the other for the new canal.

From Port Dalhousie to Allanburgh, 11 $\frac{3}{4}$  miles, there are two distinct lines of canal in operation, the old line and the enlarged or new line.

From Allanburgh to Port Colborne, a distance of 15 miles, there is only one channel, the old canal having been enlarged.

From the head of the Welland Canal there is a deep water navigation through Lake Erie, the Detroit River, Lake St. Clair, the St. Clair River, Lake Huron and River St. Mary to the Sault Canal, a distance of about 394 miles. From the Sault the distance through Lake Superior to Port Arthur is 266 miles, and to Duluth 390 miles.

SAULT STE. MARIE CANAL.

Length of canal, between the extreme ends of the entrance piers.....	5,967 feet.
Number of locks.....	1
Dimensions of lock....	900 feet by 60 feet.
Depth of water on sills (at lowest known water level).....	20 feet 3 inches.
Total rise or lockage.....	18 feet.
Breadth of canal at bottom.....	141 feet 8 inches.
Breadth at surface of water.....	150 feet.

This canal has been constructed through St. Mary's Island, on the north side of the rapids of the River St. Mary, and, with that river, gives communication on Canadian territory between Lakes Huron and Superior. The masonry pier of the bridge carrying the Canadian Pacific Railway over the canal which stands in the channel of the canal having been found to be an obstruction to navigation, is being removed.

MONTREAL, OTTAWA AND KINGSTON.

This route extends from the harbour of Montreal to the port of Kingston, passing through the Lachine Canal, the navigation section of the lower River Ottawa, and the Ottawa Canals, to the city of Ottawa; thence by the River Rideau and the Rideau Canal to Kingston, on Lake Ontario—a total distance of 245 $\frac{5}{8}$  miles.



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After leaving the Lachine Canal the works constructed to overcome difficulties of navigation are :—

The Ste. Anne's Lock,  
Carillon Canal,  
Grenville Canal,  
Rideau Canal,

}

Ottawa River Canals.

The total lockage (not including that of the Lachine Canal) is 509 feet—(345 rise, 164 fall)—and the number of locks is 55.

The following table exhibits the intermediate distances from Montreal harbour :—

Sections of Navigation.	Intermediate distances.	Total distance from Montreal.
	Miles.	Miles.
The Lachine Canal.....	8½	
From Lachine to Ste. Anne's Lock.....	15	23½
Ste. Anne's Lock and piers.....	½	23
From Ste. Anne's Lock to Carillon Canal.....	27	50
The Carillon Canal.....	1	51
From Carillon Canal to Grenville Canal.....	6½	57½
The Grenville Canal.....	1	63
From the Grenville Canal to entrance of Rideau navigation.....	56	119
Rideau navigation, ending at Kingston.....	126½	245½

STE. ANNE'S LOCK.

	Old Lock.	New Lock.
Length of canal.....	⅙ mile	⅙ mile.
Number of locks.....	1	1
Dimensions of locks.....	190 x 45 feet.	200 x 45 feet.
Total rise or lockage.....	3 feet.	3 feet.
Depth of water on sills.....	6 “	9 “

This work, with guide piers above and below, surmounts the Ste. Anne's Rapids between Ile Perrot and the head of the Island of Montreal at the outlet of that portion of the River Ottawa which forms the Lake of Two Mountains, 23½ miles from Montreal harbour.

THE CARILLON CANAL.

Length of canal.....	¾ mile.
Number of locks.....	2
Dimensions of lockage.....	200 x 45 feet.
Total rise or lockage.....	16 feet.
Depth of water on sills.....	9 “
Breadth of canal at bottom.....	100 “
Breadth of canal at water surface.....	110 “

This canal overcomes the Carillon Rapids.

From Ste. Anne's Lock to the foot of the Carillon Canal there is a navigable stretch of 27 miles, through the Lake of Two Mountains and the River Ottawa.

By the construction of the Carillon dam across the River Ottawa the water at that point is raised 9 feet, enabling the river above to be used for navigation.

GRENVILLE CANAL.

Length of canal .. ....	5¾ miles.
Number of locks.....	5
Dimensions of locks. ....	200 x 45 feet.
Total rise or lockage.....	43¾ feet.
Depth of water on sills.....	9 “
Breadth of canal at bottom... ..	40 to 50 feet.
Breadth of canal at surface of water.....	50 to 80 “

This canal, by which the Long Sault Rapids are avoided, is about 56 miles below the city of Ottawa, up to which point the River Ottawa affords unimpeded navigation.

RIDEAU NAVIGATION.

The Rideau system connects the River Ottawa, at the city of Ottawa, with the eastern end of Lake Ontario, at Kingston.

Length of navigation waters.....	126¼ miles.
Number of locks going from Ottawa to Kingston {	35 ascending. 14 descending.
Total lockage.....416¼ feet {	282¼ rise and 164 fall. } at high water.
Dimensions of locks.....	134 x 33 feet.
Depth of water on sills, 5 feet; navigation depth through the several reaches.....	4½ feet.
Breadth at canal reaches at bottom.....	{ 60 “ in earth. 54 “ in rock.
Breadth at surface of water. ....	80 “ in earth.

PERTH BRANCH.

Length of canal.....	6 miles.
Number of locks .....	2
Dimensions of locks.....	134 feet x 32 feet.
Total rise or lockage.....	26 “
Depth of water on sills.....	5 “ 6 inches.
Length of dam .....	200 “
Breadth of canal at bottom.....	40 “
Breadth of canal at surface of water.....	{ 40 “ in rock. 60 “ in clay.

The Perth branch on the Rideau Canal affords communication between Beveridge's Bay, on Lake Rideau, and the town of Perth.

The summit level of the Rideau system is at upper Lake Rideau, but several of the descending reaches are also supplied by waters which have been made tributary to them. The following description gives the sources of supply :—

From the summit, the route towards Ottawa follows the Rideau River, and that towards Kingston follows the River Cataraqui. The supply of water for the canal is derived from the reserves given in detail below.

Department of Railways and Canals.

These may be divided into three systems, viz. :

1. The summit level, supplied by the Wolf Lake system. 2. The eastern descending level to Ottawa, supplied by the River Tay system, discharging into Lake Rideau. 3. The south-west descending level to Kingston, supplied by the Mud Lake system, formerly known as the Devil Lake system, discharging into Lake Openicon.

Lake Openicon receives the waters of Buck Lake and Rock Lake.

All these waters on the descending level, supplemented by those of Lake Loughboro', flow into Cranberry Lake, which, discharging through Round Tail outlet, forms the River Cataraqui. The river, rendered navigable by dams at various points, affords a line of navigation to Kingston.

RICHELIEU AND LAKE CHAMPLAIN.

This system, commencing at Sorel, at the confluence of the River St. Lawrence and Richelieu, 46 miles below Montreal, extends along the River Richelieu, through the St. Ours Lock to the basin of Chambly, thence by the Chambly Canal to St. Johns and the River Richelieu and Lake Champlain. The distance from Sorel to the boundary line is 81 miles.

At Whitehall, the southern end of Lake Champlain Canal is entered, and connection is obtained with the River Hudson, by which the city of New York is directly reached. From the boundary line to New York, the distance is 330 miles.

The following table shows the distances between Sorel and New York:—

Section of Navigation.	Intermediate Distances in Miles.	Total Distances.
Sorel to St. Ours Lock.....	14	14
St. Ours Lock to Chambly Canal.....	32	46
Chambly Canal.....	12	58
Chambly Canal to Boundary line.....	23	81
Boundary line to Champlain Canal.....	111	192
Champlain Canal to junction with Erie Canal..	66	258
Erie Canal, from junction to Albany.....	7	265
Albany to New York.....	146	411

ST. OURS LOCK AND DAM.

Length.....	$\frac{1}{8}$ mile.
Number of locks.....	1
Dimensions of lock.....	200 feet by 45 feet.
Total rise or lockage.....	5 “
Depth of water on sills .....	7 “ at low water.
Length of dam in eastern channel.....	300 “
“ “ western channel... ..	690 “

At St. Ours, 14 miles from Sorel, the River Richelieu is divided by a small island into two channels. The St. Ours Lock is in the eastern channel.

There is a navigable depth in the Richelieu of 7 feet between St. Ours Lock and Chambly Basin, a distance of 32 miles.



CHAMBLY CANAL.

Length of canal.....	12 miles.
Number of locks.....	9
Dimensions of locks:—	
Guard Lock, No. 1, at St. Johns .....	122 feet
Lift “ 2.....	124 “
“ “ 3, 4, 5, 6 .....	118 “
“ “ 7, 8, 9 combined .....	125 “
Total rise or lockage. ....	74 “
Depth of water on sills.....	7 “
Breadth of canal at bottom.....	36 “
“ “ surface of water.....	60 “

This canal succeeds the 32 miles of navigable water between St. Ours Lock and Chambly Basin. The canal overcomes the rapids between Chambly and St. Johns.

TRENT CANAL.

The term “Trent Canal” is applied to a series of water stretches, which do not, however, form a connected system of navigation, and which in their present condition, are efficient only for local use. By various works, this local use has been extended, and by others, now in progress and contemplation, this will become a through route between Lake Ontario and Lake Huron.

The series is composed of a chain of lakes and rivers, extending from Trenton, at the mouth of the River Trent, on the Bay of Quinté, Lake Ontario, to Lake Huron.

Many years ago the utilizing of these waters for the purpose of through water communication between Lake Huron and Lake Ontario was projected.

The course, as originally contemplated and modified, is as follows:—

Through the River Trent, Rice Lake, the River Otonabee, and Lakes Clear, Stony, Lovesick, Deer, Buckhorn, Chemong, Pigeon, Sturgeon and Cameron to Lake Balsam, the summit water, about 165 miles from Trenton; from Lake Balsam by a canal and the River Talbot to Lake Simcoe; thence by the River Severn to Georgian Bay, Lake Huron; the total distance being about 200 miles, of which only about 15 or 20 miles will be actual canal.

The full execution of the scheme, commenced by the Imperial Government in 1837, was deferred. By certain works, however, below specified, sections of these waters have been made practicable for navigation, and the whole scheme is now being carried out. A branch of the main route, extending from Sturgeon Lake south, affords communication with the town of Lindsay, and, through Lake Scugog, to Port Perry, a distance of 190 miles from Trenton.

## Department of Railways and Canals.

The following table gives the distance of navigable and unnavigable reaches :—

	Navigable Miles.	Unnavigable Miles.
From Trenton, Bay of Quinté, to Nine Mile Rapids	...	9
“ Nine Mile Rapids to Percy Landing. ....	19½	
“ Percy Landing to Heeley's Falls Dam.....	...	14½
“ Heeley's Falls Dam to Peterborough.....	51¾	
“ Peterborough to Lakefield.....	...	9
“ Lakefield to a point across Balsam Lake.....	61	
	<hr/>	<hr/>
	132¼	32¾
Total distance, Bay of Quinté to a point across		
Balsam Lake.....		165
From Sturgeon Point on Sturgeon Lake, 48¾ miles		
from Lakefield, the branch through the town		
of Lindsay to Port Perry at the head of Lake		
Seugog .....		27½
		<hr/> <hr/>

The works by which the Trent navigation has been improved comprise canals, with locks and bridges, at Burleigh Rapids, Buckhorn Rapids and Fenelon Falls; also dams at Lakefield and Young's Point. By these works there is afforded communication between Lakefield, 9½ miles from Peterborough and Balsam Lake, the headwaters of the system; opening up a total of about 160 miles of direct and lateral navigation.

At Lakefield, 9½ miles from Peterborough, the dam, at the head of the Nine Mile Rapids of the River Otonabee, maintains navigation on Lake Katchiwannoe up to Young's Point.

At Young's Point, 5 miles from Lakefield, the dam between Lake Katchiwannoe and Clear Lake controls the water level through Clear and Stony Lakes up to the foot of the Burleigh Canal. The lock here, it should be observed, is controlled by the Provincial Government.

At Burleigh Rapids, 10 miles from Young's Point, a canal about 2¼ miles in length, passes the Burleigh and Lovesick Rapids, and gives communication between Stony Lake and Deer Bay.

At Buckhorn Rapids, 7 miles from Burleigh Rapids, there is a canal about one fourth of a mile long.

At Bobcaygeon, 15¾ miles from Buckhorn Rapids, a dam, 553 feet long, controls the water level up to Fenelon Falls.

At Fenelon Falls, 15 miles from Bobcaygeon, a canal about one-third of a mile in length connects Sturgeon Lake with Cameron Lake.

The following is a list of the locks, with their dimensions:—

1	lock at Rosedale, (maintained by the Ontario Government).....	100' x 30' x 4' 6' to 6' 6" depth water on mitre sill.
2	locks at Fenelon .....	134' x 33' x 5' 0" to 7' 6" depth water on mitre sill.
1	do Lindsay.....	do 5' 0" to 7' 0" do do
1	do Bobcaygeon...	do 5' 8" to 7' 6" do do
1	do Buckhorn.. ...	do 5' 0" to 9' 0" do do
1	do Lovesick. ....	do 5' 0" to 9' 4" do do
2	do Burleigh.....	do 2' 4" to 7' 0" do do
1	do Young's Point (a Provincial Government work)	134' x 33' x 5' 0" to 14' 0" depth water on mitre sill.
1	do Peterborough.	134' x 33' x 5' 0" to 10' 0" depth water on mitre sill.
1	do Hastings.....	do 7' 0" to 10' 6" do do
1	do Chisholms.....	do 5' 0" to 8' 6" do do

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13

#### ST. PETER'S CANAL, CAPE BRETON.

Length of canal .....	About 2,400 feet.
Breadth at water line.....	55 feet.
Lock. ....	One tidal lock, 4 pairs of gates.
Dimensions.....	200 feet by 48 feet.
Depth of water on sills .....	18 " at lowest water.
Depth through canal.....	19 "
Extreme rise and fall of tide in St. Peter's Bay.....	4 "

This canal connects St. Peter's Bay, on the southern side of Cape Breton, Nova Scotia, with the Bras d'Or Lakes. It crosses an isthmus half a mile in width, and gives access from the Atlantic.

#### SOULANGES CANAL.

This work is being constructed on the north side of the River St. Lawrence in place of enlarging the Beauharnois Canal on the south side. It follows a line extending upwards from Cascades Point to Macdonald's Point, near Coteau Landing. The scheme contemplates a canal on a practically straight line, 14 miles long, comprising one guard and four lift locks, overcoming a total rise of 82½ feet. (The number of locks on the Beauharnois Canal, including the guard-lock, is nine.) The dimensions of the Soulanges locks will be those of the enlarged system, namely, length 270 feet, width 45 feet, depth of water on sills 14 feet.



# Department of Railways and Canals.

## CHIEF ENGINEER'S REPORT.

DEPARTMENT OF RAILWAYS AND CANALS,  
OFFICE OF THE CHIEF ENGINEER,  
OTTAWA, 1st December, 1898.

SIR,—I have the honour to submit my annual report for the fiscal year ended 30th June, 1898, covering, however, works of construction up to 1st November instant. I had hoped to have been able to place this report in your hands at a much earlier date, but considerable delay occurred in obtaining from the Superintending Engineer of the St. Lawrence Canals his report to me; hence it is that I make my report at this late date. Accompanying it are the following:—

First.—The annual report of the General Manager of the Government Railways, attached to which are the reports of the Chief Engineer and Mechanical Superintendent of the Intercolonial Division, and the report of the Superintendent of the Prince Edward Island Division, with statements of accounts prepared by the Accountants of these Roads. (Part I.)

Second.—The Report of the Engineer who inspected the Crow's Nest Pass Railway. (Part I.)

Third.—The annual reports of the Superintending Engineers of the several canals. (Part I.)

Fourth.—A statement of the condition of the subsidies granted in aid of the construction of railways: also a list of Railway Subsidy Acts. (Part III.)

Fifth.—Statement of contracts entered into during the year, prepared by Mr. Doull. (Part IV.)

Sixth.—Statement of water powers and other public property leased by the department during the year, prepared by Mr. Doull. (Part IV.)

Seventh.—Statement of property purchased or damaged during the year, prepared by Mr. Doull. (Part IV.)

Eighth.—Agreements respecting subsidies in aid of construction of railways entered into during the year, prepared by Mr. Doull. (Part IV.)

Ninth.—The canal statistics for the season of navigation of 1897, compiled by Mr. Devlin. (Part V.)

Tenth.—The railway statistics for the year ended 30th June, 1898, compiled by Mr. Ridout, from returns prepared by the railway companies. (Part VI.)

The following table shows the length of the Government railways in operation on the 30th June, 1898 :

INTERCOLONIAL DIVISION.

	Miles.	Total miles.
Montreal to Halifax .....	833	
Moncton to St. John.....	89	
Truro to Sydney.....	217	
Oxford Junction to Pictou.....	70	
Chaudière Junction to Lévis.....	8	
Lévis to St. Charles Junction via Harlaka.....	14	
Dalhousie Junction to Dalhousie.....	7	
Derby Junction to Indiantown.....	14	
Painsec Junction to Indiantown.....	11	
Pugwash Junction to Pugwash.....	5	
Stellarton Junction to Brown's Point... ..	12	
North Sydney Junction to North Sydney.....	5	
New Glasgow to Pictou Landing. ....	7	
Dartmouth Branch.....	11.50	
	—	1,303.50

FREIGHT BRANCHES.

Nicolet Branch.....	14.76	
Rivière du Loup Wharf Branch.....	4	
Rimouski do .....	2	
Newcastle do .....	2	
Dorchester do .....	1	
Courtney Bay do .....	1	
Sackville do .....	.50	
Stewiacke do .....	1	
Halifax Cotton Factory Branch.....	1	
	—	27.26
Total.....		1,330.76

WINDSOR BRANCH.

Windsor Junction to Windsor.. ..	32
----------------------------------	----

PRINCE EDWARD ISLAND RAILWAY.

Souris to Tignish.....	168	
Mount Stewart to Georgetown.....	24	
Charlottetown to Royalty Junction.....	5	
Emerald Junction to Cape Traverse.....	13	
Alberton to Cascumpec Wharf.....	1	
	—	211
Total length of Government railways.....		1,573.76

Department of Railways and Canals.

The result of the year's operations of the Government railways may be stated as follows :—

Name of Railway.	Mileage in operation.		Amount.	Profit.	Loss.
			\$ cts.	\$ cts.	\$ cts.
Intercolonial Division . . . . .	1,145	Working expenses . . . . .	3,327,648 51		
		Earnings . . . . .	3,117,669 85		209,978 66
Windsor Branch . . . . .	32	Earnings . . . . .	37,226 64		
		Maintenance . . . . .	18,181 63		
Prince Edward Island Divi- sion . . . . .	211	Earnings . . . . .	158,950 61	19,045 01	
		Working expenses . . . . .	231,418 74		72,468 13
				19,045 01	282,446 79
Total miles . . . . .	1,388	Deduct profit from loss . . . . .			19,045 01
		Net loss . . . . .			263,401 78

The maintenance of the roads and rolling stock has received careful attention, and both roads and rolling stock continue to be in efficient condition.

The gross earnings of the Government railways for the last two years compare as follows :—

	1896-97.	1897-98.
	\$ cts.	\$ cts.
Intercolonial Division . . . . .	2,866,028 02	3,117,669 85
Windsor Branch . . . . .	40,603 23	37,226 64
Prince Edward Island Division . . . . .	153,443 13	158,950 61
Total . . . . .	3,060,074 38	3,313,847 10

Showing an increase in the gross earnings of \$253,772.72.

The gross working expenses of the Government railways for the last two years compare as follows :—

	1896-97.	1897-98.
	\$ cts.	\$ cts.
Intercolonial Division . . . . .	2,925,968 67	3,327,648 51
Windsor Branch . . . . .	10,821 04	18,181 63
Prince Edward Island Division . . . . .	240,479 90	231,418 74
Total . . . . .	3,177,269 61	3,577,248 88



Showing an increase in working expenses for the year, compared with the previous year, of \$399,979.27, which is made up of the following:—

	1896-97.	1897-98.	Difference.	
			Increase.	Decrease.
	\$ cts.	\$ cts.	\$ cts.	
Locomotive power.....	1,051,238 89	1,088,151 47	36,912 58	
Car expenses.....	750,480 08	772,194 02	21,713 94	
Maintenance of way and works.....	737,609 94	974,242 76	236,632 82	
Station expenses.....	413,841 24	429,241 20	15,399 96	
General charges.....	218,435 68	222,207 79	3,772 11	
Car mileage.....	5,663 78	21,211 64	15,547 86	
Rental of leased lines.....		70,000 00	70,000 00	
	3,177,269 61	3,577,248 88		
Net increase.....			399,979 27	

INTERCOLONIAL DIVISION.

The ocean passenger and freight traffic via the port of Halifax shows a considerable increase for the winter season of 1897-98, as compared with the previous winter season.

COMPARATIVE STATEMENT of ocean-borne passenger business done at the port of Halifax during the winter seasons of 1896-97 and 1897-98.

Name of Steamer.	1896-97. No. of Passengers.			Name of Steamer.	1897-98. No. of Passengers.		
	1st Class.	2nd Class.	Total.		1st Class.	2nd Class.	Total.
Mongolian.....	29	351	380	Gallia.....	25	239	264
Labrador.....	96	462	358	Lake Winnipeg.....	15	180	195
Numidian.....	29	204	233	Lake Ontario.....	13	90	103
Vancouver.....	64	496	560	Lake Huron.....	17	112	129
Laurentian.....	41	307	348	Lake Superior.....	21	125	146
Scotsman.....	42	251	293	Numidian.....	34	270	304
State of Nebraska.....	4	43	47	Parisian.....	37	463	500
Parisian.....	52	453	505	Siberian.....	2	22	24
Siberian.....		102	102	Assyrian.....		13	13
Scotia.....		279	279	Mongolian.....	19	130	148
Prussia.....		471	471	Vancouver.....	15	144	159
				Roumanian.....		4	4
				Laurentian.....	6	39	45
				Scotsman.....	32	223	255
				Carthaginian.....	13	44	57
				Labrador.....	41	333	374
				Sarmatian.....		47	47
				Californian.....	33	341	374
				La Champagne.....	90		90
				Bulgaria.....	91	614	705
				Palatia.....		441	441
				Pisa.....		468	468
				Italia.....		738	738
				Christiana.....		527	527
				Sorrenta.....		78	78
Total.....	357	3,419	3,776	Total.....	503	5,685	6,188

Department of Railways and Canals.

Of the 3,766 passengers in 1896-97, 2,993 travelled via St. John by the Canadian Pacific Railway, and 773 travelled via Chaudière by the Grand Trunk Railway.

Of the 6,188 passengers in 1897-98, 5,364 travelled via St. John by the Canadian Pacific Railway, and 622 travelled via Chaudière by the Grand Trunk Railway, and 202 travelled by the Intercolonial Railway to Montreal since the 1st March, 1898.

COMPARATIVE STATEMENT of ocean-borne freight traffic during the winter seasons of 1896-97 and 1897-98.

Name of line of Steamers.	Winter of 1896-97.			Name of line of Steamers.	Winter of 1897-98.		
	Measure-ment tons.	Weight tons.	Total tons.		Measure-ment tons.	Weight tons.	Total tons.
Allan Line from Liverpool.....	1,172	721	1,893	Allan Line from Liverpool.....	907	1,302	2,209
Dominion Line from Liverpool.. ..	707	263	970	Beaver Line from Liverpool.....	195	111	306
Canada & Newfoundland from Liverpool.. ..	6	975	981	Canada & Newfoundland from Liverpool.....	67	882	949
Furness Line from London.....	2,191	1,280	3,471	Furness Line from London.....	744	2,543	3,133
Total.....	4,076	3,239	7,315	Total.....	1,913	4,838	6,597

The above statement shows a decrease of 718 tons of ocean-borne freight traffic for the winter season of 1897-98, as compared with the winter season of 1896-97.

The following is a statement of the quantity and classes of the rolling stock purchased on capital account up to the 30th June, 1898:—

	Passenger Car Stock.							Conductors' Van.	Box and Cattle Cars.	Platform Cars.	Coal Cars of three several kinds.	Snow Ploughs.	Wing Ploughs.	Flangers.	Rotary Snow Ploughs.
	Engines.	1st Class Sleeping and Parlour.	1st Class.	2nd Class Sleepers.	2nd Class.	Baggage and Mail.									
	208	15	92	7	94	24	99	2,071	2,209	999	44	10	21		
		5	.....	.....	.....	39	.....	103	110	418	.....	.....	.....	.....	.....
										658					
Total .....	208	20	92	7	94	63	99	2,174	2,319	2,075	44	10	21		

The following is a statement of the quantity and classes of rolling stocks which have been rebuilt during the year ended 30th June, 1898, at the cost of revenue to maintain the work:—

Total .....	Engines.	Passenger Car Stock.						Conductors' Van.	Box and Cattle Cars.	Platform Cars.	Coal Cars of three several kinds.	Snow Ploughs.	Wing Ploughs.	Flangers.	Rotary Snow Ploughs.
		1st Class Sleeping and Parlour.	1st Class.	2nd Class Sleepers.	2nd Class.	Baggage and Mail.									
6 .....	6 .....	.....	.....	.....	.....	.....	.....	120 .....	11 .....	133 .....	.....	.....	.....	.....	.....



The following table shows the working expenses, gross earnings, the tonnage of freight and number of passengers carried each year since 1st July, 1876, when the road was first opened as a through line to the west:—

Year.	Average Miles in Operation.	Working Expenses.	Gross Earnings.	Profit.	Loss.	Tons of Freight carried.	No. of Passengers carried.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.		
1876-77.....	714	1,661,673 55	1,154,445 33	.....	507,228 22	421,327	613,420
1877-78.....	714	1,816,273 56	1,378,946 78	.....	432,326 78	522,710	618,957
1878-79.....	714	2,010,183 22	1,294,009 69	.....	716,083 53	510,861	640,101
1879-80.....	829	1,603,429 71	1,506,298 48	.....	97,131 23	561,924	581,483
1880-81.....	840	1,759,851 27	1,760,393 92	542 65	.....	725,777	631,245
1881-82.....	840	2,069,657 48	2,079,262 66	9,605 18	.....	838,956	779,994
1882-83.....	840	2,360,373 27	2,370,910 10	10,547 83	.....	970,961	878,600
1883-84.....	887	2,377,133 62	2,384,414 92	6,981 30	.....	1,009,237	944,636
1884-85.....	941	2,519,751 56	2,441,203 66	.....	78,547 90	989,936	957,228
1885-86.....	946	2,583,999 67	2,450,093 88	.....	133,905 79	1,023,788	932,880
1886-87.....	966	2,922,369 62	2,660,116 93	.....	262,252 69	1,143,020	942,784
1887-88.....	971	3,366,781 74	2,983,336 05	.....	383,445 69	1,288,823	1,040,163
1888-89.....	971	3,244,647 73	2,967,801 00	.....	276,846 73	1,218,877	1,136,272
1889-90.....	971	3,560,575 74	3,012,739 87	.....	547,835 87	1,368,819	1,219,233
1890-91.....	1,094	3,662,341 94	2,977,395 38	.....	684,946 56	1,804,534	1,298,304
1891-92.....	1,142	3,439,377 00	2,945,441 97	.....	493,935 03	1,264,575	1,297,732
1892-93.....	1,142	3,045,317 50	3,065,499 09	20,181 59	.....	1,388,080	1,292,878
1893-94.....	1,142	2,981,671 98	2,987,510 27	5,838 29	.....	1,342,710	1,301,062
1894-95.....	1,142	2,936,902 74	2,940,717 95	3,815 21	.....	1,267,816	1,352,667
1895-96.....	1,142	3,012,827 62	2,957,640 10	.....	55,187 52	1,379,618	1,471,866
1896-97.....	1,145	2,925,968 67	2,866,028 02	.....	59,940 65	1,296,028	1,501,690
1897-98.....	.....	3,327,648 51	3,117,669 85	.....	209,978 66	1,434,576	1,528,444

The following table shows the number of tons of coal carried over the Inter-colonial Railway from the Nova Scotia collieries to Chaudière Junction and St. John for points west thereof, and to local stations in each year since the road was opened as a through line:—

Year.	For the West.		To Local Stations.	Total.
	Via Chaudière.	Via St. John.		
1876-77.....	.....	.....	103,420	103,420
1877-78.....	.....	.....	97,043	97,043
1878-79.....	.....	.....	112,232	112,532
1879-80.....	300	.....	135,369	136,466
1880-81.....	1,097	.....	174,483	184,607
1881-82.....	6,102	4,022	218,364	248,158
1882-83.....	18,015	11,779	227,380	262,423
1883-84.....	12,837	22,206	252,014	293,562
1884-85.....	22,014	19,534	213,791	349,004
1885-86.....	133,440	1,773	215,272	407,592
1886-87.....	171,170	21,150	233,178	453,585
1887-88.....	192,871	27,536	309,727	529,659
1888-89.....	183,704	36,228	338,538	526,487
1889-90.....	160,026	27,923	366,967	556,546
1890-91.....	164,453	25,126	344,829	498,038
1891-92.....	113,996	39,213	392,441	433,806
1892-93.....	35,447	5,918	402,653	543,296
1893-94.....	136,868	3,775	367,390	478,691
1894-95.....	102,273	8,028	310,253	385,200
1895-96.....	67,082	7,865	369,708	432,513
1896-97.....	53,124	9,681	331,469	382,172
1897-98.....	38,395	12,305	351,069	369,949
	9,084	9,796		



## Department of Railways and Canals.

It thus appears that the largest tonnage of coal carried over the road for the west was in the year 1886-87, when it reached 220,407 tons, since which the through coal traffic for points west of the Intercolonial Railway has greatly declined.

TABLE showing the number of bushels of grain carried during each year for shipment at Halifax since the road was opened as a through line to the west.

Year.	Bushels.		Total.	Year.	Bushels.		Total.
	Via Chaudière.	Via St. John.			Via Chaudière.	Via St. John.	
1876-77.....				1887-88.....	69,021		69,021
1877-78.....				1888-89.....	129,725		129,725
1878-79.....				1889-90.....	502,012		502,012
1879-80.....				1890-91.....	148,803	69,534	218,337
1880-81.....				1891-92.....	745,997	519,500	1,265,497
1881-82.....				1892-93.....	155,306	197,669	352,975
1882-83.....	31,011		31,011	1893-94.....	Nil.	8,026	8,026
1883-84.....	73,389		73,389	1894-95.....	Nil.	Nil.	Nil.
1884-85.....	300,901		300,901	1895-96.....	Nil.	Nil.	Nil.
1885-86.....	389,122		389,122	1896-97.....	Nil.	Nil.	Nil.
1886-87.....	575,880		575,880	1897-98.....	8,000	Nil.	8,000

TABLE showing the number of barrels of flour carried during each year since the road was first opened as a through line to the west.

Year.	Barrels.	Year.	Barrels.
1876-77.....	254,710	1887-88.....	871,838
1877-78.....	657,778	1888-89.....	948,514
1878-79.....	630,329	1889-90.....	1,116,050
1879-80.....	533,248	1890-91.....	1,013,129
1880-81.....	672,310	1891-92.....	954,015
1881-82.....	692,095	1892-93.....	856,913
1882-83.....	983,916	1893-94.....	944,967
1883-84.....	817,134	1894-95.....	938,351
1884-85.....	935,977	1895-96.....	822,097
1885-86.....	761,127	1896-97.....	847,701
1886-87.....	763,894	1897-98.....	987,408

TABLE showing the number of bushels of grain carried during each year since the road was first opened as a through line to the west.

Year.	Bushels.	Year.	Bushels.
1876-77.....	292,852	1887-88.....	1,219,035
1877-78.....	331,170	1888-89.....	1,526,158
1878-79.....	302,921	1889-90.....	2,610,202
1879-80.....	534,021	1890-91.....	2,890,921
1880-81.....	565,678	1891-92.....	3,776,677
1881-82.....	560,253	1892-93.....	1,514,619
1882-83.....	1,195,601	1893-94.....	1,304,684
1883-84.....	654,673	1894-95.....	1,036,384
1884-85.....	734,902	1895-96.....	1,064,385
1885-86.....	849,800	1896-97.....	1,093,499
1886-87.....	1,018,395	1897-98.....	1,551,372

TABLE showing the quantity of lumber in feet carried during each year over the road since it was first opened for traffic as a through line to the west.

Year.	Feet.	Year.	Feet.
1876-77.....	58,096,474	1887-88.....	197,755,272
1877-78.....	56,626,547	1888-89.....	199,507,777
1878-79.....	55,626,696	1889-90.....	210,886,071
1879-80.....	55,462,654	1890-91.....	184,188,324
1880-81.....	72,841,388	1891-92.....	175,474,340
1881-82.....	78,356,418	1892-93.....	181,211,013
1882-83.....	104,633,417	1893-94.....	200,507,949
1883-84.....	131,120,948	1894-95.....	202,247,269
1884-85.....	138,493,675	1895-96.....	226,332,715
1885-86.....	117,186,512	1896-97.....	243,355,725
1886-87.....	161,801,763	1897-98.....	354,093,816

TABLE showing the number of live stock carried during each year over the road since it was first opened for traffic as a through line to the west.

Year.	Number.	Year.	Number.
1876-77.....	34,414	1887-88.....	98,302
1877-78.....	46,498	1888-89.....	85,960
1878-79.....	47,584	1889-90.....	86,771
1879-80.....	70,990	1890-91.....	95,529
1880-81.....	61,574	1891-92.....	87,889
1881-82.....	73,479	1892-93.....	93,369
1882-83.....	68,338	1893-94.....	79,203
1883-84.....	60,090	1894-95.....	72,106
1884-85.....	70,785	1895-96.....	64,051
1885-86.....	74,498	1896-97.....	72,082
1886-87.....	82,896	1897-98.....	89,301

TABLE showing the number of tons of ocean-borne goods to and from Europe, via the port of Halifax, carried over the road during each year since it was first opened for traffic as a through line.

Year.	Via Chau- dière to and from the West.	Via St. John to and from the West.	To and from local Stations.	Total.
	Tons.	Tons.	Tons.	Tons.
1876-77.....				
1877-78.....	14,949		3,405	18,354
1878-79.....	21,628		2,643	24,271
1879-80.....	21,073		4,952	26,025
1880-81.....	15,454		3,334	18,788
1881-82.....	21,607		4,168	25,775
1882-83.....	24,875		7,911	32,786
1883-84.....	19,696		6,533	26,229
1884-85.....	22,787		8,405	31,192
1885-86.....	13,464		8,216	21,680
1886-87.....	16,923		9,811	26,734
1887-88.....	41,864		8,878	50,742
1888-89.....	17,340		11,481	28,821
1889-90.....	9,895		11,730	21,625
1890-91.....	9,923		10,764	20,687
1891-92.....	9,719	17	23,835	33,571
1892-93.....	7,295	100	12,319	19,714
1893-94.....	3,023	204	13,455	16,682
1894-95.....	6,749	213	10,399	17,361
1895-96.....	3,767	314	16,748	20,829
1896-97.....	2,654	263	17,239	20,156
1897-98.....	5,950	1,637	18,633	26,220

The above statement does not include deals, which amounted to 47,265 tons for the year 1897-98.



## Department of Railways and Canals.

TABLE showing the number of tons of raw and refined sugar carried over the road during each year since it was first opened as a through line.

Year.	Raw Sugar.				Refined Sugar.			
	To Chaudière for the West.	To St. John for the West.	To Local Stations.	Total.	To Chaudière for the West.	To St. John for the West.	To Local Stations.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1876-77.....	340			340				
1877-78.....	186			186				
1878-79.....	1,041			1,041				
1879-80.....	12,220			12,220				
1880-81.....	13,872			13,872	4,022		2,902	6,924
1881-82.....	14,256		1,290	15,546	7,146		3,607	10,753
1882-83.....	9,465		508	9,973	11,126		5,497	16,623
1883-84.....	13,778		3,068	16,846	14,543		7,265	21,808
1884-85.....	10,381		3,661	14,042	18,024		8,445	26,469
1885-86.....	4,394		3,998	8,392	7,660		5,858	13,518
1886-87.....	20,450		8,500	28,950	15,044		8,395	23,439
1887-88.....	14,320		14,085	28,405	21,641		7,133	28,774
1888-89.....	24,358		7,160	31,518	12,955		11,120	24,075
1889-90.....	7,390		8,913	16,303	6,778		6,125	12,903
1890-91.....	5,088	4,670	8,215	17,973	10,130	468	5,996	16,594
1891-92.....	7,142	3,960	10,535	21,637	12,633	7,674	12,414	32,721
1892-93.....	Nil.	Nil.	10,137	10,137	8,327	6,456	7,840	22,623
1893-94.....	Nil.	Nil.	6,775	6,775	17,729	6,967	8,885	33,581
1894-95.....	Nil.	Nil.	10,342	10,342	13,351	15,819	4,695	33,865
1895-96.....	Nil.	Nil.	9,824	9,824	15,138	13,734	11,309	40,181
1896-97.....	Nil.	Nil.	4,925	4,925	5,694	8,069	6,957	20,720
1897-98.....	Nil.	Nil.	Nil.	Nil.	6,624	8,821	10,989	26,434

TABLE showing the number of tons of fresh and salt fish carried over the road during each year since it was opened as a through line.

Year.	Fresh Fish.				Salt Fish.			
	To Chaudière for the West.	To St. John for the West.	To Local Stations.	Total.	To Chaudière for the West.	To St. John for the West.	To Local Stations.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1876-77.....	530	921	527	1,978	551	1,848	802	3,201
1877-78.....	596	1,015	474	2,085	898	1,644	805	3,347
1878-79.....	471	1,336	817	2,624	988	1,038	1,048	2,974
1879-80.....	519	1,362	453	2,334	1,612	2,238	959	4,809
1880-81.....	498	1,879	920	3,297	2,418	937	1,051	4,406
1881-82.....	475	1,619	957	3,051	4,031	1,066	2,487	7,584
1882-83.....	542	384	393	1,319	3,299	759	1,354	5,412
1883-84.....	838	1,682	412	2,932	1,322	1,143	1,224	3,689
1884-85.....	1,062	1,885	484	3,431	3,563	3,600	1,596	8,759
1885-86.....	1,669	1,645	902	4,216	1,680	2,047	3,376	7,103
1886-87.....	1,278	1,572	2,008	4,858	3,236	569	1,747	5,552
1887-88.....	1,533	1,477	1,031	4,041	2,617	476	1,099	4,193
1888-89.....	2,474	2,000	1,870	6,344	3,070	7,746	2,994	13,810
1889-90.....	2,235	1,787	2,111	6,223	2,449	847	3,288	6,584
1890-91.....	2,029	2,788	1,848	6,665	1,953	1,917	3,236	7,106
1891-92.....	1,367	1,746	547	3,660	1,946	928	1,889	4,763
1892-93.....	1,683	1,875	3,340	6,898	3,262	1,811	2,176	7,249
1893-94.....	1,959	2,192	2,224	6,375	2,921	1,814	2,962	7,697
1894-95.....	2,006	3,726	1,160	6,892	2,075	1,849	5,285	10,209
1895-96.....	1,966	3,059	1,319	6,344	1,863	1,087	2,791	5,741
1896-97.....	3,307	3,115	1,286	7,708	2,168	1,176	2,536	5,880
1897-98.....	3,575	3,703	1,052	8,330	1,729	1,066	2,210	5,005



Nineteen and a fifth miles of the 56-lb. steel rails have been lifted and replaced at the cost of revenue by 67-lb. steel rails, and 650,135 ties have been renewed.

CAPITAL ACCOUNT.

Total cost of road and equipment up to 30th June, 1897 :—

Road, &c.....	\$47,780,799 18
Rolling stock.....	7,888,114 77
Total.....	\$55,668,913 95

The increased freight yard and warehouse accommodation provided on the east side of Water Street at the deep water terminus at Halifax greatly facilitates the business of the station.

Both the road and rolling stock continue in a high stage of efficiency.

WINDSOR BRANCH.

This road continues to be operated by the Dominion Atlantic Railway Company, formerly the Windsor and Annapolis Railway Company, the company receiving two-thirds of the gross earnings for working the traffic, and the Government one-third of the gross earnings for maintaining the way and works.

The road has been maintained in efficient condition.

TABLE showing the earnings and its division between the Windsor Branch and the Main Line of the Intercolonial Railway between Windsor and Halifax, the maintenance expenses and net earnings of the Windsor Branch for each year since 1880.

Year.	Miles in Operation.	One-third Gross Earnings.	Proportion of one-third Gross Earnings credited to Line Windsor Junction to Halifax.	Proportion of one-third Gross Earnings credited to the Windsor Branch.	Maintenance Expenses.	Profit.	Loss.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1880-81..	32	28,434 29	7,217 76	21,216 53	20,502 26	714 27	.....
1881-82..	32	28,461 07	7,407 88	21,053 19	13,099 55	7,953 64	.....
1882-83..	32	32,199 77	8,085 88	24,113 89	23,103 93	1,009 96	.....
1883-84..	32	30,428 39	7,409 46	23,018 93	22,140 86	878 07	.....
1884-85..	32	32,246 30	7,794 95	24,451 35	18,751 96	5,699 39	.....
1885-86..	32	31,185 63	7,527 52	23,658 11	19,229 49	4,428 62	.....
1886-87..	32	33,564 58	8,237 00	25,327 58	26,042 33	.....	714 75
1887-88..	32	32,242 85	7,689 30	24,553 55	24,040 33	513 22	.....
1888-89..	32	37,313 43	8,941 32	28,372 11	20,856 50	7,515 61	.....
1889-90..	32	39,544 19	9,381 73	30,162 46	18,982 82	11,179 64	.....
1890-91..	32	39,519 56	9,284 43	30,235 13	28,931 71	1,303 42	.....
1891-92..	32	42,891 23	9,382 38	33,508 85	19,514 37	13,994 48	.....
1892-93..	32	43,901 28	9,585 17	34,316 11	16,889 95	17,426 16	.....
1893-94..	32	41,834 70	8,859 23	32,975 47	17,645 09	15,330 38	.....
1894-95..	32	50,703 84	11,626 20	39,077 64	14,640 07	24,437 57	.....
1895-96..	32	47,456 74	10,894 91	36,561 83	16,476 46	20,085 37	.....
1896-97..	32	54,208 81	13,605 58	40,603 23	10,821 04	29,782 19	.....
1897-98..	32	48,892 21	11,665 57	37,226 64	18,181 63	19,045 01	.....

# Department of Railways and Canals.

## PRINCE EDWARD ISLAND RAILWAY.

### CAPITAL ACCOUNT.

Total cost of road and rolling stock up to the 30th June, 1898:—

Road, &c.....	\$3,309,378 26
Rolling stock.....	458,729 00

Total..... \$3,768,107 26

The rolling stock provided on capital account consists of:—

Passenger Car Stock.										
Engines	1st Class Car.	2nd Class Car.	Baggage and Smoking Cars.	Official Car.	Box and Cattle Cars.	Platform Car.	Conductors' Vans.	Pay Car.	Snow Ploughs	Flangers.
21	17	13	6	1	175	125	3	1	8	7

Statement of rolling stock rebuilt during the year—1 first-class car, 1 baggage car, 6 box and cattle cars, 15 platform cars, 1 snow plough, 1 flanger.

The following table shows the working expenses, the gross and net earnings, the tons of freight and number of persons carried each year since the 30th June, 1875, when the road was first opened for traffic:—

Year.	Miles in Operation.	Working Expenses.	Gross Earnings.	Loss.	Tons of Freight carried.	No. of Passengers carried.
		\$ cts.	\$ cts.	\$ cts.		
1875-76.....	199	214,930 43	118,060 96	96,869 47	28,358	93,964
1876-77.....	199	228,595 25	130,664 92	97,930 33	41,039	93,478
1877-78.....	199	221,599 49	135,899 60	85,699 89	38,923	111,428
1878-79.....	199	223,313 12	125,855 99	97,457 21	38,668	105,046
1879-80.....	199	164,640 55	113,851 11	50,789 44	37,208	90,533
1880-81.....	199	203,122 88	131,131 43	71,991 45	45,336	102,937
1881-82.....	199	228,259 97	137,267 54	90,922 43	48,315	118,436
1882-83.....	199	252,808 41	146,170 42	106,637 99	51,920	117,162
1883-84.....	199	236,428 13	144,504 12	91,924 01	51,841	118,988
1884-85.....	211	211,207 01	158,588 06	52,618 95	57,346	130,423
1885-86.....	211	216,744 34	155,584 36	61,159 98	57,913	120,374
1886-87.....	211	204,237 37	155,303 37	48,934 00	53,589	103,067
1887-88.....	211	229,639 95	158,363 62	71,276 33	59,603	131,246
1888-89.....	211	247,559 44	171,369 56	76,189 89	55,682	152,780
1889-90.....	211	266,485 85	160,971 78	105,514 07	51,604	133,099
1890-91.....	211	257,990 08	174,258 05	83,732 03	59,511	145,508
1891-92.....	211	289,706 38	157,442 69	132,263 69	51,065	139,389
1892-93.....	211	226,422 17	162,690 42	63,731 75	56,718	132,111
1893-94.....	211	226,891 06	158,533 83	68,357 23	53,577	123,727
1894-95.....	211	232,905 19	149,654 71	83,250 41	48,325	125,089
1895-96.....	211	225,138 56	146,476 54	78,662 02	46,395	122,586
1896-97.....	211	240,489 90	153,443 13	87,046 77	52,151	121,498
1897-98.....	211	231,418 74	158,950 61	72,468 13	57,539	126,510

Twelve a half miles of old iron track were renewed with steel rails weighing 50 lbs. to the yard, so that the track now stands:—

Steel rails (50 lbs. to yard) .....	151½
Iron rails (40 lbs. to yard).....	59½

Total length of road..... 211



One thousand tons of 50-lb. steel rails were used for renewing the 12½ miles of track.

The road and rolling stock are in good running condition.

CROW'S NEST PASS RAILWAY.

The construction of this road being considered a necessity for the successful developement of the mining interests of British Columbia, Parliament by 60-61 Victoria, chapter 5, 1897, granted a subsidy of \$11,000 per mile in aid of it. Under this Act the Canadian Pacific Railway Company undertook the work of construction and entered into a contract, breaking ground on the 15th July, 1897, since which the works of construction have been vigorously prosecuted.

The length of road under contract is—

	Miles.
Lethbridge to Knoknoack Station (Kootenay Lake).....	290
Knoknoack Station to Nelson.....	54
Total length.....	344

The supervision of the location of the line has evidently been entrusted to competent hands, as the ground has been carefully selected and as good an alignment as the physical features of the country will admit of obtained. The maximum grade is 1 per cent of 52<sup>8.0</sup>/<sub>100</sub> per mile, the severest curves being 10 and 12 degrees, except in one instance, where a 15 degree curve has been introduced.

The work of construction has so far been confined to the section between Lethbridge and Knoknoack Station 290 miles, over which the track laying was completed on the 8th October ultimo, and at this date of writing the line over this section is in safe condition for public traffic. A train transfer landing has been constructed on Kootenay Lake at Knoknoack, so that cars with their loads can be transferred without transhipment from that point to Nelson, which will greatly assist mining operations through the Kootenay district.

The amount of subsidy paid up to 1st November, 1898, is \$2,162,190.

CAPITAL ACCOUNT.

CANADIAN PACIFIC RAILWAY.

The value of work done under the arbitrators' award on the division between Savona's Ferry and Emory's Bar, is as follows, viz.:—

The total award of the arbitrators in favour of the Canadian Pacific Railway Company was.....	\$579,255 20
The following statement shows the progress made with the work from time to time :—	
Amount of work done previous to the date of award, July, 1891....	\$202,675 20
Amount of work done up to November, 1898.. . . .	376,347 33
	579,022 53
	\$ 233 67



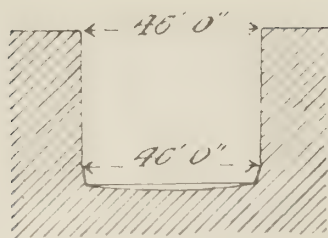
# Department of Railways and Canals.

## GENERAL REMARKS.

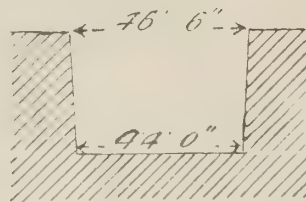
It is only proper here to note that amongst the various works and undertakings of the company for the substantial improvement of their railway in the directions of steel bridge construction, the formation of solid embankments and the adaptation of the most recent appliances to their rolling stock in order to ensure safety and comfort to their passengers and employees, they have now equipped with self couplers 8,456 freight cars, and have fitted 6,601 freight cars with automatic brakes.

The following are the traffic operations of the Canadian Pacific Railway for each year ended 30th June, since the road was first opened through to the Pacific Coast, for traffic, in June, 1886 :

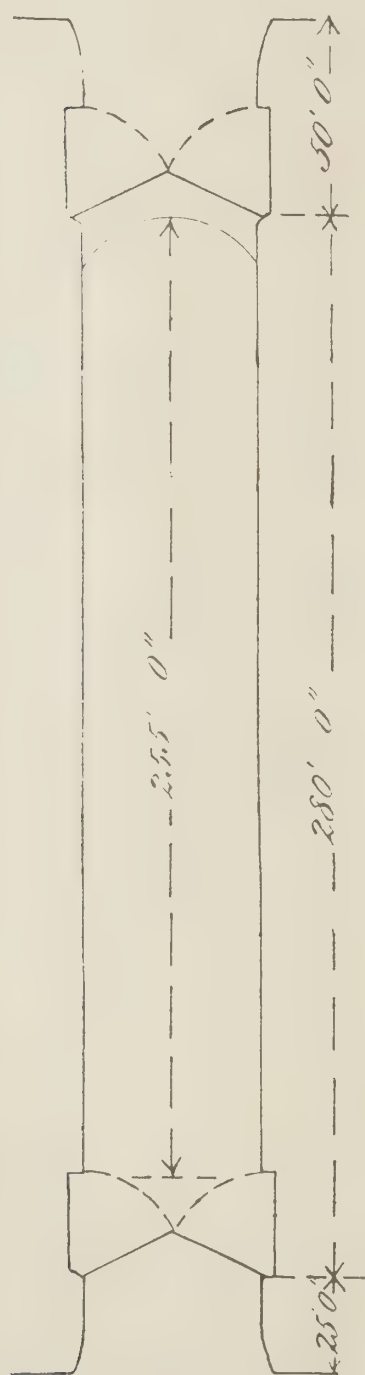
	1886-87.	1887-88.	1888-89.	1889-90.	1890-91.
	Miles, 4,274.	Miles, 4,662.	Miles, 4,974.	Miles, 5,086.	Miles, 5,537.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Earnings.....	10,650,254 08	12,711,010 01	13,016,611 81	15,572,985 62	18,672,174 04
Working expenses.....	7,299,045 16	9,034,360 27	8,997,312 05	9,424,166 45	11,538,133 53
Net revenue.....	\$3,351,208 82	\$3,676,649 74	\$4,019,299 76	\$6,148,819 17	\$7,134,040 51
No. Passengers carried.....	1,949,215	2,135,735	2,457,306	2,685,730	2,971,774
Tons Freight carried.....	2,118,319	2,321,957	2,636,121	3,006,684	3,675,113
	1891-92.	1892-93.	1893-94.	1894-95.	1895-96.
	Miles, 5,537.	Miles, 5,782.	Miles, 6,094.	Miles, 6,159.	Miles, 6,211.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Earnings.....	20,789,104 17	20,795,304 66	19,357,098 05	17,912,273 60	20,175,384 99
Working expenses.....	12,441,126 28	12,665,587 12	12,447,808 03	11,282,506 00	12,202,360 50
Net revenue.....	\$8,347,977 89	\$8,129,717 54	\$6,909,290 02	\$6,629,767 60	\$7,973,024 49
No. Passengers carried.....	3,150,684	3,335,598	3,153,340	2,892,995	3,036,619
Tons Freight carried.....	4,058,575	4,266,348	4,014,915	3,720,567	4,576,632
	1896-97.	1897-98.			
	Miles, 6,314.	Miles, 6,334.			
	\$ cts.	\$ cts.			
Earnings.....	21,242,638 75	25,470,796 18			
Working expenses.....	12,576,800 42	14,684,790 65			
Net revenue.....	\$8,665,838 33	\$10,786,005 53			
No. Passengers carried.....	2,987,163	3,327,318			
Tons Freight carried.....	4,640,578	5,493,030			



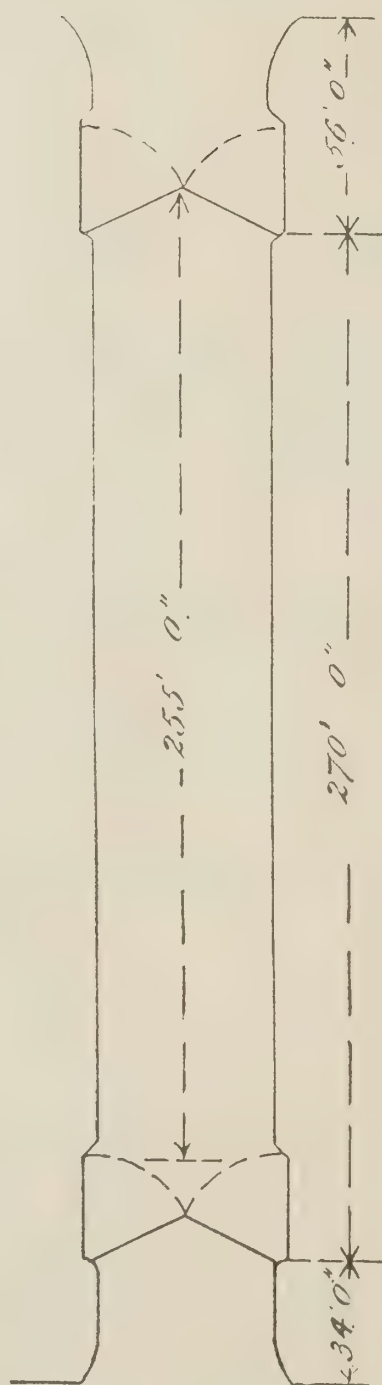
SECTION OF  
SOULANGES CANAL LOCK.



SECTION OF  
WELLAND CANAL LOCK



SOULANGES CANAL LOCK.



WELLAND CANAL LOCK

## Department of Railways and Canals.

### CANALS—CAPITAL ACCOUNT.

#### SAULT STE. MARIE CANAL.

The obstruction caused to navigation by the pier of the Canadian Pacific Railway Bridge planted in the centre of the prism of the canal has been a frequent source of complaint from the captains of vessels using the canal, and in view of the fact that several vessels have been damaged by striking against it, the interests of navigation seemed to urgently require the removal of the pier and a vote of \$55,000 was obtained from Parliament for the purpose. A contract has been let to Mr. David Chalmers, of Owen Sound, for the mason work, at schedule prices, and the work of taking down the old steel superstructure and replacing it with the enlarged bridge is under contract with the Dominion Bridge Co. of Lachine, for a lump sum of \$38,770. Mr. Chalmers has made good progress with the masonry, which will be shortly finished, and the Dominion Bridge Co. are manufacturing the steel deck at Lachine with a view of removing the old bridge and erecting the new one during the winter, so as not to obstruct navigation. In addition to the works above mentioned, some portions of the canal grounds have been filled and graded and ornamental trees have been planted, which add greatly to the general appearance of the canal property. The lower entrance at the bend having been found too narrow, and several vessels, in consequence, having run against it, it was seen to be absolutely necessary for the safe and successful operation of the canal to take a strip off the south side of the channel at this point, by so doing both widening and straightening the channel. The work has been done under contract with Mr. Neil McDonald; the amount of excavation necessary will be about 12,000 cubic yards. The work is about completed, but no final measurements can be made until the cleaning up of the bottom is carried out.

It is desirable for the improvement of the general appearance of the property that the work of levelling the grounds and the planting of ornamental trees be continued next season.

As regards its facilities for navigation, the canal in its upper entrance channel has a depth of water of 18 feet with 20 feet 4 inches on the mitre sill of the lock and 18 feet 6 inches in the lower entrance channel; these figures apply, it must be observed, to the lowest known stages of water level.

The total cost of construction and equipment up to	
30th June, 1897, is.....	\$3,657,573 65
Expenditure during year ending 30th June, 1898.....	21,004 56
Total cost of construction and equipment up to 30th	_____
June, 1898.....	\$3,678,578 21
Expended from 30th June, 1898, to 1st November, 1898,	5,648 79
Total cost of construction and equipment up to Nov.,	_____
1898. ....	\$3,684,227 00

#### SOULANGES CANAL.

I am glad to be able to report a marked improvement in the manner in which the works on this canal have been carried on the past year and up to the present time.

The necessity for fulfilling the wishes of the government and the general expectation that the canal should be opened for a fourteen feet navigation next spring



has been strenuously urged upon the contractors from time to time, and they have responded by the increase of their plant and the extension of their organizations—as required of them—putting forward every effort to place their respective sections in a condition for operation by the desired date.

The sections which comprise the most difficult class of work remaining to be executed are Nos. 6 and 7, under contract with Mr. Andrew Onderdonk, and Section No. 12, under contract with Mr. M. J. Hogan. Both are works which other contractors have failed to carry through to completion, owing to their difficult character, though on neither of them is there any constructive work. The material to be excavated on Sections Nos. 6 and 7 was composed of an easy working brown clay and a most difficult and costly working blue clay. The first contractor stripped off the brown clay, and after touching the blue clay, which he found very expensive work, he failed to continue vigorous operations, and the work was accordingly taken out of his hands and relet to the present contractor at figures much below the cost of execution. Mr. Onderdonk, however, notwithstanding the difficulties of the case, which have been much increased owing to the wetness of the past autumn, has steadily gone on with the works, and has not spared expenditure in procuring plant and rolling stock, &c. He has now employed on the earth work, in addition to wheel scrapers, 4 steam shovels, 10 locomotives, with a full complement of dump and platform cars; with these he proposes to work throughout the winter season with an expressed expectation of completing the excavation of the 325,000 cubic yards of earth yet to be removed, and of having his sections ready for a 14-foot navigation next spring. Quite recently, however, a falling off in the monthly progress has arisen, and unless a marked improvement is made in the manner of conducting the work, I am satisfied these sections will not be ready to pass 14 feet navigation next season. I shall urge him to greater efforts, and from my past experience of him, I believe he will favourably respond by making greater efforts.

Of Section No. 12, I may say that before Mr. M. J. Hogan took hold of it, it had been twice under contract, and in each case the contractor failed to prosecute the work to completion, owing to its costly character. The work is composed of hard clay intermixed with nests of boulders of large sizes. Although Mr. Hogan is conducting his work at a heavy loss, he is proceeding with great spirit and energy and without complaint, expressing his determination to have it completed and ready for navigation next spring at any cost. This work is well organized, and as there remains only about 30,000 cubic yards of earth excavation and 35,000 cubic yards of rock to move, and as he will be able to work at the rock all through the winter season, I confidently expect he will accomplish what he has undertaken.

Messrs. Ryan & McDonell have shown a commendable desire to have their sections of work, Nos. 1 and 2, ready for the 14 feet navigation next spring, and being reliable and experienced contractors, their organization has been good, so that with close attention they have succeeded in executing a large amount of work during the season.

Sections Nos. 9 and 13 are under contract to Messrs. Manning & McDonald, who have required constant urging on with their work by the Superintending Engineer, and cannot, apparently, be made to realize the necessity of having it completed for navigation next spring, and who, although they have done a considerable amount of work during the past season, might nevertheless have accomplished much more had.

## Department of Railways and Canals.

they been disposed to do so: they have not, however, evinced willingness to listen to the advice given them by the Superintending Engineer, whose only desire was, of course, to see that the wishes of the government were carried out.

Sections Nos. 3, 5, 6, 8, 10 and 11 are all either finished or are practically so.

The steel bridges have been constructed by the Dominion Bridge Company, who have only one remaining to be erected, and for this the material is delivered on the ground.

The lock gates are under contract with Messrs. J. & R. Miller, a firm of very reliable contractors. They have stepped three pairs of the gates, and have others ready for stepping as soon as the water is let in the canal.

Mr. Charles Raynor has the contract of the weirs and foundation of the power house on section No. 8. The work is far advanced towards completion.

Tenders have been invited for the electrical machinery and for the superstructure of the power house.

The following gives a statement of the position of each contract:—

### Sections Nos. 1 and 2—

Approximate value of work under contract.....	\$983,000 00
Gross amount of progress estimate for October, 1898.....	781,363 55
Balance .....	<u>\$201,636 45</u>

### Section No. 3 (completed)—

Approximate value of work under contract. ....	\$200,000 00
Gross amount of last progress estimate.....	193,852 61
Balance .....	<u>\$ 6,147 39</u>

### Sections Nos. 4, 5, 6 and 7—

Approximate value of work under contract. ....	\$957,000 00
Gross amount of progress estimate for October, 1898.....	684,976 73
Balance .....	<u>\$272,023 27</u>

### Section No. 8—

Approximate value of work under contract.....	\$312,000 00
Gross amount of progress estimate for October, 1898.....	271,191 14
Balance .....	<u>\$ 40,808 86</u>

### Section No. 9—

Approximate value of work under contract.....	\$180,000 00
Gross amount of progress estimate for October, 1898.....	130,171 30
Balance .....	<u>\$ 49,828 70</u>

### Section No. 10 (completed)—

Approximate value of work under contract.....	\$292,000 00
Gross amount of last progress estimate.....	286,801 80
Balance .....	<u>\$ 5,198 20</u>



## Section No. 11—

Approximate value of work under contract.....	\$325,000 00
Gross amount of progress estimate for October, 1898.....	311,022 70
Balance .....	<u>\$ 13,977 30</u>

## Section No. 12—

Approximate value of work under contract.....	\$220,000 00
Gross amount of progress estimate for October, 1898.....	169,344 26
Balance .....	<u>\$ 50,655 74</u>

## Section No. 13—

Approximate value of work under contract.....	\$625,000 00
Gross amount of progress estimate for October, 1898.....	589,544 57
Balance .....	<u>\$ 35,455 43</u>

The contractors for these thirteen sections of the canal have been paid for work executed up to 1st November, 1898, as follows:—

Sections 1 & 2.....	Archibald Stewart .....	\$487,420 00	
	Ryan & McDonnell.....	250,810 00	
			<u>\$ 738,230 00</u>
Section 3 .....	O'Leary Bros.....		193,852 61
Sections 4, 5, 6 & 7.....	George Goodwin.....	\$281,160 00	
	Andrew Onderdonk.....	370,730 00	
			<u>651,890 00</u>
Section 8.....	Charles Raynor .....		253,071 00
" 9.....	Manning & McDonald.....		117,170 00
" 10.....	Rogers & Taylor.....		280,576 60
" 11.....	George Goodwin.....	\$ 42,020 00	
	Thomas Feeney .....	53,780 00	
	Poupore & Fraser.....	186,120 00	
			<u>281,920 00</u>
Section 12. ....	O'Brien & Sons... ..	\$ 25,367 50	
	George Goodwin.....	8,100 00	
	M. J. Hogan.....	119,450 00	
			<u>152,917 50</u>
Section 13.....	Manning & McDonald .....		540,590 00
			<u>\$3,210,207 61</u>

Based on the contract prices, the estimated cost of this canal including land purchases and damages is..	\$5,250,000 00
Total payment to 1st Nov., 1898, including Oct. estimates.....	<u>4,251,158 21</u>
Balance .....	<u>\$ 998,841 79</u>



## Department of Railways and Canals.

The payments are divided as follows, viz.:—

For works and engineering expenses.....	\$3,934,658 38
For canal and damages.....	316,499 83
Total.....	<u>\$4,251,158 21</u>

It will be observed that the estimated cost of the construction of this canal has been increased to \$5,250,000; this increase is brought about by the fact that observations taken from time to time of the height of water in the St. Lawrence River showed a most unusual drop in the level during the last few years, indicating the necessity of keeping the bottom of the canal well down, and as a consequence it was lowered  $1\frac{1}{2}$  foot below the level on which the original estimate was made, thereby ensuring a full depth of 14 feet of water in the mitre at even very extremely low water, which is a very valuable and important consideration to trade interests.

### LACHINE CANAL.

The works of enlargement are about completed.

#### ENLARGEMENT.

Messrs. McNamee & Mann, who have the contract for deepening the prism to a depth of 15 feet, have practically completed their work, but when the canal is unwatered in the spring they will have to clean up the bottom and the sides. The work which was being carried on at the Canadian Pacific Railway bridge by day's labour is completed. The work of deepening has necessitated the rebuilding of the stone walls along the side of the canal in many places; this will be carried on when the canal is unwatered next and the following spring.

The approximate value of work under contract is...	\$576,000 00
Gross amount of progress estimates for Oct., 1898...	555,939 59
Balance .....	<u>\$ 20,060 41</u>

The total amount expended on the works of enlargement of this canal, including progress estimates for October, 1898, \$8,112,832.13.

### LAKE ST. LOUIS.

#### CONSTRUCTION.

The Weddell Dredging Company have practically completed the formation of this channel, which has a width of 300 feet and a depth of 17 feet. The forwarders, however, do not appear to be satisfied, and they are about to petition to have a shoal removed, which is located on one side of it and outside its limits; giving as a reason that there is a cross current which will make it difficult and dangerous to navigate long tows.

The approximate value of work under contract is....	\$228,400 00
Gross amount of progress estimates for Oct., 1898...	217,063 69
Balance .....	<u>\$ 11,336 31</u>

GRENVILLE CANAL.

ENLARGEMENT.

Messrs. Piggot & Ingles, the contractors for this enlargement, have made very slow and unsatisfactory progress with the work, and the anticipation expressed in my last year's report of a vigorous prosecution of the work during last winter have not been realized. Not only have the contractors been dilatory, but in carrying it on they have disregarded the convenience of the public by blocking up the highway and providing no temporary road for their use, although the contract calls for such provision.

The approximate value of work under contract is....	\$ 98,100 00
Gross amount of progress estimate for Oct., 1898....	41,636 91
Balance .....	<u>\$ 56 463 09</u>

TRENT CANAL.

CONSTRUCTION.

No further section has been placed under contract since my report of last year, and the work under contract has made very slow progress.

The Peterborough-Lakefield division, 10 miles in length is, as I have before stated, divided into two sections, section No. 1, Lakefield end, is under contract with Messrs. Brown, Love & Aylmer. They have made fairly good progress; the five concrete locks having been completed, also three of the four dams; the fourth dam will be finished in about three weeks. The rock cut at Lakefield is nearly completed, and the rocky reefs in the Otonabee River, near Lakefield are being removed; the whole sections will, no doubt, be finished early next season.

The approximate value of work under contract is...	\$ 363,000 00
Gross amount of progress estimate for Oct., 1898 ....	300,715 94
Balance.....	<u>\$ 62,284 06</u>

Section No. 2—Peterborough end—Messrs. Corry & Laverdure, contractors. Little progress has been made during the past season with the works on this section, the contractors having chiefly devoted their attention to the preparation of the foundation for the lock at the lower entrance and the taking out of the foundation for the lift lock, also the construction of the dam at Nassau. The two first mentioned works have dragged along very slowly, though fair progress was made with the dam which will be completed in a week or two. The work remaining to be done on this section may be said to be the excavating of about 10,000 cubic yards of foundation of the lift lock and the building of the concrete walls, the building of the lower entrance lock, and the excavation of the prism of the canal near the lift lock. It will probably occupy the greater part of next summer to complete this section.

The approximate value of work under contract is...	\$ 443,000 00
Gross amount of progress estimate for Oct., 1898....	189,118 00
Balance.. ..	<u>\$ 253,882 00</u>



## Department of Railways and Canals.

The Rosedale channel which was carried on by day's labour is completed, giving a channel 7 feet deep and 60 feet wide.

The quantity of dredging executed was 26,481 cub. yds., which cost \$39,758.32.

The Balsam Lake and Lake Simcoe division is, as I stated in my last year's report, 21 miles in length, of which the section No. 1 is 6½ miles in length, under contract with Mr. Andrew Onderdonk. There has practically been little or no work done this past season, although there has been an organization sufficient to have completed the work many months ago. There remains very little work to be done to complete, but that little cannot now be done until next spring.

Approximate value of work under contract .....	\$ 447,800 00
Gross amount of progress estimate of Oct., 1898.....	420,590 95
Balance .. .....	<u>\$ 27,209 05</u>

### CORNWALL CANAL.

#### CONSTRUCTION AND ENLARGEMENT.

The works of construction and enlargement on this canal are completed except some cleaning up in the bottom, etc., next spring, when the canal is unwatered for repairs, and the improvement proposed at the upper entrance, required to better ensure the safety of large craft entering the canal, the cost of which latter work is estimated at \$150,000. The Sheik's Island Dams, about which so much has been said and written *pro* and *con*, are proving a great success, and the improvement to navigation caused thereby is much appreciated by the forwarders and others using the canal. This canal is in condition to pass vessels drawing 14 feet of water. Although the works are practically completed, the final estimates in favour of Messrs. Wm. Davis & Son and the Gilbert Blasting and Dredging Company have not yet issued; they are under preparation, but owing to the immense volume of figures and of detail plans of the work as executed, it will be several months before they are ready for submission to me.

The following works were under contract to Wm. Davis & Sons:—Sections 2, 3 4, and Sheik's Island Dams.

The approximate value of work under contract is....	\$2,720,000 00
Gross amount of progress estimates for Oct., 1898 ...	2,616,070 54
Balance .....	<u>\$ 103,929 54</u>

The following works were under contract with the Gilbert Blasting and Dredging Company:—Sections Nos. 5, 6, 7 and 8, which I reported last year as having been finished. The final estimate has not yet been issued but is in course of preparation.

The approximate value of work under contract is....	\$ 503,000 00
Gross amount of last estimate.....	499,903 66
Balance .....	<u>\$ 3,096 34</u>

Section No. 10, upper entrance, was executed by Messrs. Jocks, DeLorimier & Co. They have been paid their final estimate, amounting to \$439,854.60, which was the cost of the work under this contract.



The contractors for the enlargement of this canal and construction of the Sheik's Island Dams have been paid the following amounts up to 1st November, 1898:—

Section 2	Wm. Davis & Sons.....	\$	915,981	12
"	3 " .....		550,903	57
"	4 " .....		721,026	61
"	5 Gilbert Blasting & Dredging Co.....		138,306	73
Sheik's Island. Dam, Wm. Davis & Sons.....			423,683	50
Section 6	Gilbert Blasting & Dredging Co .....		47,721	37
"	7 " .....		96,832	88
"	8 " .....		216,270	21
"	10 Jocks, DeLorimier & Co.....		439,854	60
Total.....			\$3,550,580	59
The estimated cost of enlargement of the canal and construction of the Sheik's Island Dams is.....\$ 4,710,000 00				
The amount expended up to 1st Nov., 1898.....			4,593,939	47
Balance.....			\$	116,060 53

with the addition of \$150,000, if the work of improving the upper entrance is to be proceeded with.

FARRAN'S POINT CANAL.

ENLARGEMENT.

The works of enlargement of this canal are under contract with the Canadian Construction Co. of Montreal. The principal works to be executed were entrance piers at both ends of the canal, a masonry lock 800 feet in length, and the widening, deepening and straightening of the prism.

They entered into the contract on 1st June, 1897, about 17 months ago, after which date they had to organize their work. Their organization at the date of my last year's report was anything but satisfactory, and I feared the result. However, I am pleased to be able to speak in the highest terms of the manner in which they have since organized and pressed forward their operation so as to ensure the canal being ready to pass vessels drawing 14 feet of water next season if they continue to prosecute the work vigorously through the winter season. The masonry of the lock may be said to be practically finished, and a channel with 15 feet of water is very nearly cut through the whole length of the canal. By this I do not desire it to be inferred that the works are nearly completed; far from it, there will be much to be done in finishing up after the canal is ready for the passage of vessels.

The approximate value of work under contract is.....		\$670,000	00
Gross amount of progress estimate for Oct., 1898. ....		452,508	98
Balance .....		\$217,491	02
Estimated cost of enlargement.....		\$720,000	00
Amount expended up to 1st Nov., 1898.....		420,208	43
Balance.....		\$299,791	57

## Department of Railways and Canals.

### RAPIDE PLAT CANAL.

#### ENLARGEMENT.

I stated in my last year's report that the work of enlargement of this canal was completed with the exception of clearing up the bottom, which I now have to report as having since been done.

The engineers are working at the final estimate which is not yet completed.

The estimated cost of the enlargement is.....\$1,876,400 00

Amount expended to 1st Nov., 1898, is..... 1,833,400 25

Balance..... \$ 42,999 75

The following statement shows the amount of the last progress estimates and the amounts the contractors have been paid up to 1st November, 1898:

	Gross Amt. Oct. Est.	Paid.
Section 1, Poupore & Fraser....	\$898,174 96	\$884,338 45
do 2, Weddell Dredging Co.....	223,419 80	223,419 80
do 3, Poupore & Fraser.....	246,726 12	246,726 12
Total.....	\$1,368,320 88	\$1,354,484 37

The enlargement of this canal is completed and ready to pass vessels drawing 14 feet of water.

### GALOPS CANAL.

#### ENLARGEMENT.

For enlargement purposes this canal is divided into three sections, as follows, viz., the Iroquois section, the Cardinal section, and the upper entrance section.

*The Iroquois Section* extends from Iroquois to Presqu'île. Messrs Larkin & Sangster entered into contract for this work on the 30th of May, 1897. The chief works of construction, as I stated in my report of last year, are the building of crib entrance piers, a masonry lock 800 feet long, and bridge abutments, the cutting of new prism for some distance and the widening of the old prism at the west end. These contractors have certainly pushed their work forward vigorously; only once or twice have they showed a lack of interest in advancing the work with a view of having their section ready for navigation next spring. I must, however, give them credit for renewed activity when the necessity for greater energy was brought strongly before them, as they at once set to work cheerfully to meet the requirements. This section is now in such a condition that if they work diligently and vigorously throughout the winter season, during the period in which the old canal is unwatered, there will be no difficulty in having the section in condition to pass vessels drawing 14 feet in the spring of 1899, but not otherwise.



The approximate value of work under contract is...\$1,066,759 00  
 Gross amount of progress estimate for Oct., 1898..... 703,637 44

Balance..... \$ 363,121 56

*Cardinal Section.*—This section extends from Presqu'île through Cardinal a point near to the locks at the upper entrance. Messrs. William Davis & Sons entered into the contract for this work on 10th May, 1897, verbally giving the most positive assurance that they could and would complete the work within the time named in the contract, and I, personally knowing Mr. Michael Davis, the senior member of the firm to be an able contractor, full of resources, a good organizer, and a man of ability, great energy and activity, was pleased when the government decided to accept them as the contractors. The work in August and September last was progressing very favourably, the daily output from the "Cardinal Cut" averaging per day in August 6,800 and in September 7,700 cubic yards, which rate of progress or an approximation to it, if maintained to the end, would have ensured this section of the canal being ready for the passage of vessels of 14 feet draught in the spring of 1899, but they have given notice to the Department that they will not have their section of work ready to pass navigation in May next: this is very disappointing to me and damaging to other contractors who are making efforts to force their work through to completion. The completion of this cut is the essential part of the work, and up to the 1st of December, 1898, the contractors had excavated only a total of 1,450,000 cubic yards out of a total of 1,964,469 cubic yards required to be taken out for it, leaving a balance of 514,469 cubic yards still to be removed.

Approximate value of work under contract is.....\$1,264,129 00  
 Gross amount of progress estimate for October, 1898. 438,138 00

Balance.....\$ 825,991 00

*Upper entrance enlargement.* Messrs. Murray & Cleveland are the contractors for this section of work. The work remaining to be done is a small piece of masonry on entrance piers, and the removal of the small portions of the old lock which still remains. It is expected that these works will be finished this year, when the whole will, practically, be completed.

Approximate value of work under contract.....\$1,420,000 00  
 Gross amount of progress estimate for Oct., 1898.... 1,364,557 49

Balance.....\$ 55,442 51

Total estimated cost of enlargement..... \$4,030,000 00  
 Amount paid up to 1st November, 1898 ..... 2,729,565 79

Balance .....\$1,300,434 21



# Department of Railways and Canals.

## NORTH CHANNEL.

### STRAIGHTENING AND DEEPENING.

Mr. M. A. Cleveland entered into a contract for this work on the 14th May, 1897; he is a contractor of considerable ability and a good organizer. The work consists of cutting through earth and rock a channel 300 feet wide with 17 feet of water. He has a splendid organization, and is making rapid and satisfactory progress with the work, which, if maintained throughout the winter season, as I have no doubt will be the case, vessels drawing 14 feet of water will be able to pass safely through the channel next spring. This is an improvement which is much appreciated by the forwarders and others.

Approximate value of work under contract... ..	\$700,000 00
Gross amount of progress estimate for Oct., 1898.....	403,640 09
	<hr/>
Balance.....	\$296,359 91
	<hr/>

## RIVER REACHES.

### IMPROVEMENT OF CHANNEL OF LAKE ST. FRANCIS, ST. REGIS BAR, $2\frac{1}{2}$ MILES EAST OF CORNWALL.

Messrs. Manning & McDonald entered into a contract for this work on the 24th May, 1898. It consists of the cutting and straightening of the channel. Considerable work has been executed, sufficient to pass vessels of 14 feet draught.

Approximate value of work under contract.....	\$51,399 00
Gross amount of progress estimate for October, 1898.	16,313 00
	<hr/>
Balance.....	\$35,086 00
	<hr/>

### HAMILTON ISLAND BAR, $10\frac{1}{2}$ MILES EAST OF CORNWALL.

Messrs. Manning & McDonald entered into a contract for this work, on the 24th of May, 1898. Considerable work has been done, sufficient to give a channel for 14 feet navigation.

Approximate value of work under contract.....	\$13,823 60
Gross amount of progress estimate for October, 1898.	3,823 60
	<hr/>
Balance.....	\$10,000 00
	<hr/>

GALOPS RAPIDS IMPROVEMENTS.

The Gilbert Brothers Engineering Co. have their special plant employed to clean out, at a certain figure per day, the channel of 200 feet in width and 17 feet deep, which was cut in 1888 and previous years. It was found that obstructions existed in this channel which were a menace to navigation, and required to be removed. How these obstructions occurred has never been ascertained positively, but the Superintending Engineer expresses the belief that the ice coming down the river in the spring freshet drifted boulders and masses of rock into the channel and dropped them there. The work should be finished early next season.

Estimated cost of forming and cleaning out channel.	\$125,740 50
Amount paid up to 1st November, 1898.....	66,740 50
	<hr/>
Balance.....	\$59,000 00
	<hr/>

GENERAL REMARKS.

Of all the works of enlargement on the chain of canals on the St. Lawrence River, that of Messrs. William Davis & Sons, on the Cardinal section is the most behind ; all the other sections are in such a condition as to satisfy me that vessels drawing fourteen feet of water will be able to navigate them next spring. I have already expressed my disappointment with the progress of these contractors.

# Department of Railways and Canals.

## CANADIAN GOVERNMENT CANALS.

MEMORANDUM of Expenditure on construction up to 1st December, 1898.

Canal.	Original construction up to 30th June, 1898.	Enlargement up to 30th June, 1898.	Enlargement from 30th June, 1898, up to 1st December, 1898.	Total cost of Enlargement up to 1st December, 1898.	Total expenditure on Original Construction and Enlargement up to 1st December, 1898.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Lake St. Francis.....		3,420 00	14,700 00	18,120 00	18,120 00
Lachine .....	2,589,532 85	8,035,209 33	99,683 18	8,134,892 51	10,724,425 36
Lake St. Louis .....		192,458 69	28,601 85	221,060 54	221,060 54
Soulanges.....	3,655,435 61				4,415,597 50
Beauharnois.....	1,626,690 26				1,626,690 26
Cornwall .....	1,945,624 73	4,579,734 27	14,888 23	4,594,622 50	6,540,247 23
Farran's Point.....	80,041 21	239,155 20	221,694 06	460,849 26	540,890 47
Rapide Plat .....	426,882 15	1,820,118 42	13,906 73	1,834,025 15	2,260,907 30
Galops .....	813,732 18	2,398,650 94	451,035 87	2,849,686 81	3,663,418 99
Galops Channel .....		771,188 54	27,860 00	798,548 54	798,548 54
North Channel . . . . .		171,336 65	199,180 13	370,516 78	370,516 78
Murray.....	1,247,470 26				1,247,470 26
St. Lawrence River and Canals	18,442 85	206,003 20	3,430 30	209,433 50	209,433 50
Welland .....	7,693,824 03	16,112,614 98		16,112,614 98	23,806,439 01
Sault Ste. Marie.....	3,678,578 21				3,686,761 64
Chambly .....	637,206 76				637,206 76
Carillon and Grenville... ..	73,053 64	4,051,307 03	2,701 20	4,054,008 23	4,127,061 87
Trent. . . . .	2,376,628 98				2,462,779 29
Rideau .....	4,095,043 87				4,095,043 87
St. Ours. . . . .	121,537 65				121,537 65
Culbute (canal abandoned)... ..	379,494 46				379,494 46
Ste. Anne's... ..	134,456 51	1,035,759 12		1,035,759 12	1,170,215 63
St. Peter's ... ..	248,762 84	399,992 80		399,992 80	648,755 64
	31,842,439 05	40,016,949 17	1,077,181 55	41,094,130 72	73,772,622 55



CANALS.

OPERATION AND MAINTENANCE.

The canals have been successfully operated throughout the year, no serious delays to traffic having occurred, with the exception of the Welland Canal and Lachine Canal to which I refer in their place. The necessary repairs and renewals have been executed.

STATEMENT showing the dates of closing and opening canals.

Name of Canal.	Closed.	Opened.
	1897.	1898.
Sault Ste. Marie.....	14th December .....	11th April.
Lachine .....	1st December ...	25th April.
Beauharnois.....	30th November .....	24th April.
Cornwall.....	8th December ..	23rd April.
Williamsburg.....	8th December .....	23rd April.
Welland.....	14th December .....	20th April.
Chambly.....	1st December.....	2nd May.
St. Ours .....	27th November .....	3rd April.
Ste. Anne's.....	30th November .....	11th April.
Carillon and Grenville .....	30th November .....	30th April.
Rideau.....	{ at Kingston.....	23rd November .....
	{ at Ottawa.....	25th November ..
Trent .....	{ on Central Reach .....	20th November ...
	{ on Lower Reach .....	24th November .....
Murray ..	3rd December .....	30th March.
	1898.	
St. Peter's ..	3rd January .....	2nd April.

Department of Railways and Canals.

STATEMENT showing the dimensions of the locks of the canals.

	Existing System.				Under Construction.			
	No. of Locks.	Length.	Width.	Depth of water on mitre sill.	No. of Locks.	Length.	Width.	Depth of water on mitre sill.
		Feet.	Ft.	Ft.		Feet.	Ft.	Ft.
Lachine . . . . .	5	270	45	14				
Beauharnois . . . . .	9	200	45	9				
Chambly . . . . .	9	118-125	22-6-24	7				
St. Ours . . . . .	1	200	45	7				
St. Anne's . . . . .	1	200	45	9				
Carillon and Grenville . . . . .	7	200	45	9				
Trent . . . . .	13	134	33	5	6	134	33	6
Rideau . . . . .	49	134	33	5				
Rideau, Perth Branch . . . . .	2	134	32	5-6				
Murray (no locks) . . . . .				11				
Cornwall (Old) . . . . .	5	200	55	9				
Cornwall (New) . . . . .	5	270	45	14				
Farran's Point (Old) . . . . .	1	270	45	Guard.				
Rapide Plat (Old) . . . . .	1	200	45	9	1	800	45	14
Rapide Plat (New) . . . . .	1	270	45	14				
Galops (Old) . . . . .	1	270	45	Guard.				
Galops (New) . . . . .	2	200	45	9				
	1	270	45	14	1	800	45	14
	1	270	45	Guard.				
	24	150	45	10-3				
Welland (Old) . . . . .	2	200	45	10-3				
	1	230	45	10-3				
Welland (New) . . . . .	26	270	45	14				
Welland Feeder . . . . .	1	150	26-6	9				
	1	200	45	9				
Welland, Port Robinson Branch . . . . .	2	150	26-6	9				
Welland, Maitland Branch . . . . .	1	185	45	11				
Sault Ste. Marie . . . . .	1	900	60	20-3				
Soulanges . . . . .					4	270	45	14
					1	270	45	Guard.
St. Peter's . . . . .	1	200	48	18				

NOTE.—The enlarged locks on the St. Lawrence and the Welland canals will accommodate vessels not exceeding 255 feet in length.

LACHINE CANAL.

OPERATION.

There has been no serious interruption to traffic in this canal during the year, the damage done by the breaking of the Montreal water works pipes being repaired on Sundays. The canal has been satisfactorily operated throughout.

MAINTENANCE.

The superintending engineer's report gives particulars of the repairs executed. The cost of these repairs for the year ended 30th June, 1898, is as follows:—

Ordinary repairs under the head of Staff and Repairs...\$33,391 92  
Special repairs under the head of Income :  
Construction of a ditch. .... 819 62

Total .....\$34,211 54

## BEAUHARNOIS CANAL.

## OPERATION.

The traffic was passed through this canal satisfactorily, with the exception of the delay to navigation of 6 days caused by a washout at the lower gates at lock No. 11.

## MAINTENANCE.

The following is a statement showing the cost of repairs for the year 1897-98 :  
The cost of ordinary repairs was as follows :—

Ordinary repairs under head of Staff and Repairs.....	\$16,164 92
Special repairs under head of Income :	
To complete removal of shoal at both entrances. ....	5,799 34
Total.....	<u>\$21,964 26</u>

## CHAMBLY CANAL.

## OPERATION.

The traffic on this canal was conducted satisfactorily and without interruption during the year.

## MAINTENANCE.

The following is a statement of the necessary repairs executed during the year :

Ordinary repairs under head of Staff and Repairs.....	\$12,466 51
Special repairs under head of Income :—	
To continue and complete the drainage works and cul-	
verts at St. Johns, P.Q. ....	8,644 56
To tear down and rebuild abutment wall at lock 8.....	2,998 48
To lay a coat of gravel on canal bank.....	1,499 44
To purchase half acre of land, house, outbuildings, &c.	42 20
	<u>\$25,651 19</u>

## ST. OURS LOCK.

## OPERATION.

This lock was worked for the year without accident.

## MAINTENANCE.

The cost of the work of repairs for the year was as follows :—

Ordinary repairs under head of Staff and Repairs.....	\$ 692 04
There were no special repairs under the head of Income.	Nil.
Total.....	<u>\$ 692 04</u>



## Department of Railways and Canals.

### STE. ANNE'S LOCK.

#### OPERATION.

No interruption to traffic occurred on this lock during the year.

#### MAINTENANCE.

The cost of maintaining the lock in good condition has been as follows:—

Ordinary repairs under head of Staff and Repairs.....	\$ 1,699 44
There were no special repairs under the head of Income	Nil.

Total .....	<u>\$ 1,699 44</u>
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### CARILLON AND GRENVILLE CANALS.

#### OPERATION.

These canals were operated successfully, without accident, during the year 1897-98.

#### MAINTENANCE.

The cost of repairs executed during the year was as follows:—

Ordinary repairs under head of Staff and Repairs.....	\$10,993 61
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Special repairs under head of Income:

To build spare lock gates.....	2,843 72
To build rubble wall of boulders.....	1,342 66
To build puddle trench, Innes property.....	895 65

Total.....	<u>\$16,075 64</u>
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### TRENT CANAL.

#### OPERATION.

The canal works are in a good state of repair, and no interruption to traffic has occurred during the year.

#### MAINTENANCE.

The cost of repairs for the year was as follows:—

Ordinary repairs under head of Staff and Repairs.....	\$4,998 80
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Special repairs under head of Income:—

To dredge channel, upper entrance Bobcaygeon.....	2,497 31
To build guard pier.....	599 94
To remove rock in channel above Burleigh lock and Stony Lake.....	3,394 80
To dredge in Katchawannoe Lake.....	2,499 49

Totals.....	<u>\$13,990 34</u>
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## RIDEAU CANAL.

## OPERATION.

Owing to the improvements made in the channel, navigation has been attended with no difficulty, and the traffic has been worked satisfactorily.

## MAINTENANCE.

The cost of maintaining the canal for the year has been as follows:—

Ordinary repairs under head of Staff and Repairs.....	\$26,599 93
Special repairs under head of Income:—	
To remove "White Horse" rock shoal at Manotick.....	1,191 10
To renew Bank Street (Ottawa) swing bridge.....	9,386 93
Land damages on Kingston Mills level, and legal expenses in connection therewith.....	1,472 15
To pay J. K. Read for outbuildings and improvements.	200 00
To build sill of lock 2.....	750 00
To take down and rebuild wing wall at Burritt's... ..	30 00
To repair bulkhead at Old Slys.....	301 11
Total .....	<u>\$39,931 22</u>

## MURRAY CANAL.

## OPERATION.

Vessels passed through this canal during the year without accident of any kind. It was closed to traffic on 3rd December, 1897, and reopened on 30th March, 1898.

## MAINTENANCE.

The canal is in good condition and repair. The cost of repairs was as follows:—

Ordinary repairs under head of Staff and Repairs.....	\$4,710 23
Special repairs under head of Income .....	Nil.
Total.....	<u>\$4,710 23</u>

## CORNWALL CANAL.

## OPERATION.

The canal was closed for the season on 8th December, 1897, and reopened for traffic on 23rd April, 1898. This canal was operated during the year without any accident occurring to interfere with navigation.

## MAINTENANCE.

Large necessary repairs were made during the year and the canal is now in efficient working condition. The cost of the repairs is as follows:—

Ordinary repairs under head of Staff and Repairs.....	\$15,431 02
Special repairs under head of Income .....	Nil.
Total .....	<u>\$15,431 02</u>

## Department of Railways and Canals.

### WILLIAMSBURG CANALS.

#### OPERATION.

These canals were closed to traffic on 8th December, 1897, and opened for the season of 1898 on 23rd April, 1898.

These canals have been operated during the year without accident.

#### MAINTENANCE.

The canal works are in good condition, the necessary repairs thereto having been executed during the year. The cost of the repairs is as follows:—

Ordinary repairs under head of Staff and Repairs.....	\$8,032 84
Special repairs under head of Income.....	Nil.

Total... ..	<u>\$8,032 84</u>
-------------	-------------------

### WELLAND CANAL.

#### OPERATION.

This canal was closed to traffic on 14th December, 1897, and reopened on 20th April, 1898. The steamer "Britannic" carried away the gates at lock 6 on 10th August, 1897, causing interruption to traffic until noon on 14th August, 1897. The steamer "Lakeside" carried away the gates of lock No. 1 of the old canal on 2nd October, 1897, when navigation on both canals was interrupted until 9th October, 1897; with these two exceptions the navigation was not interfered with.

#### MAINTENANCE.

The works of repairs necessary on this canal were not fully carried out, owing to the pressure brought to bear by the transportation companies and others to have the canal opened for navigation at such an early date.

The cost of repairs during the year was as follows:—

Ordinary repairs under the head of Staff and Repairs.	\$59,571 66
Special repairs under the head of Income:—	

To renew superstructure, west pier at Pt. Dalhousie	18,630 36
---	-----------

To renew fender works of bridges in new canal...	16,172 89
--	-----------

Total.. ..	<u>\$94,374 91</u>
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### ST. PETER'S CANAL.

#### OPERATION.

This canal was closed to navigation on 2nd January, 1897, and reopened on 20th April, 1897. There have passed through the canal during the year 1,702 vessels.

#### MAINTENANCE.

Some repairs are required on this canal which have been postponed to next year. The canal, however, generally is in good repair. The cost of repairs during the year amounted to:—

Ordinary repairs under head of Staff and Repairs.....	\$453 85
---	----------

Special repairs under head of Income:

Repairs to the canal.....	111 70
---------------------------	--------

Total.....	<u>\$565 55</u>
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## GENERAL OBSERVATIONS RESPECTING GOVERNMENT CANALS.

It is confidently expected that there will be a 14-foot navigation available next season from Lake Erie to Montreal. The sections of the Trent Canal under construction will, no doubt, be completed next season, which will be a convenience for the movement of local traffic. The works of enlargement of the Grenville Canal have progressed so slowly that there is little hope of these improvements being made available for navigation for another year at least. The removal of the railway bridge pier from the centre of the prism of the Sault Ste. Marie Canal will greatly facilitate traffic passing through the canal, and obviate risk of accidents to vessels.

No capital expenditure has been made during the past year on the Welland, Rideau, Carillon, Chambly, Beauharnois, Ste. Anne's or St. Ours Canals. Supplies and materials for the several canals continue to be purchased, for the most part, by competition, and books are kept on the canals showing the receipts and issues of materials and supplies.

Cost of maintenance and operation of the canal system for the year ended 30th June, 1898 .....	\$ 624,755 96
Net revenue of canals after deducting refunds .....	407,662 81
<hr/>	
Excess of cost of maintenance and operation over revenue.....	\$ 217,093 15
<hr/>	

## RAILWAY SUBSIDIES.

No subsidies to railways were granted at the last session of Parliament, but as I mentioned in my report of last year, under the terms of the Subsidy Act of the previous session it is not possible to show clearly the amount of cash subsidy granted, as the amount of subsidy payable will, in several cases, be based upon the cost of each road. For the same reason, I am unable to give the amount of cash subsidy available, but I shall, as heretofore, show the amount actually paid; also the number of miles of railway for which subsidy granted per mile was available on the 1st of July, 1897, and the number of miles of railway for which cash subsidy per mile was granted, built up to the 30th of June, 1898. There will also be found the amount of subsidy paid up to the 1st of November, 1898.

There also appears a statement of the cash subsidy per annum paid up to the 30th of June, 1898, with the number of miles built; also a statement showing the railways which have been granted aid in land.

Amount of cash subsidy per mile paid up to 30th June, 1898 .....	\$ 15,843,972 11
Number of miles of railway on which cash subsidy per mile was paid up to 30th June, 1898.....	5,771.62
Amount of subsidy paid up to 1st November, 1898	\$17,692,273 11
Cash subsidy per annum paid up to 30th June, 1898	\$1,679,400 00
Number of miles built on cash subsidy per annum up to 30th June, 1898 .....	252
Number of miles of railway to which aid in land has been authorized.....	2,937.21
Number of acres of land, the grant of which in aid of railways has been authorized ... ..	39,725,130

## Department of Railways and Canals.

The foregoing statements do not include the grants in cash and land to the Canadian Pacific Railway, the Canada Central Railway and the Esquimalt and Nanaimo Railway.

These roads received in cash as follows:—

Canadian Pacific Railway.....	\$ 25,000,000
Canada Central Railway.....	1,525,250
Esquimalt and Nanaimo Railway.....	750,000
	<hr/>
	\$ 27,275,250

In land as follows :—

	Acres.
Canadian Pacific Railway . . . . .	25,000,000
Esquimalt and Nanaimo Railway . . . . .	1,900,000
<b>Total . . . . .</b>	<b>26,900,000</b>

## CANAL STATISTICS.

These statistics are for the season of 1897; they have been prepared by Mr. R. Devlin, the officer in charge of the Canal Statistics office.

TABLE showing the tons of freight passing through each canal, the tolls collected, and the number of trips of vessels passing through each canal, for the year ending 31st December, 1897:—

Name of Canal.	Tons of Traffic passing through.	Tolls collected.	Number of trips of vessels passing through.
		\$ cts.	
Lachine. . . . .	1,231,365	70,718 09	11,137
Beauharnois. . . . .			
Cornwall. . . . .			
Williamsburg. . . . .			
Welland. . . . .	1,274,292	189,113 47	2,725
Chambly. . . . .	352,136	23,308 53	3,099
Ste. Anne's. . . . .	562,370	34,032 28	2,198
Carillon. . . . .			
Grenville. . . . .			
Rideau. . . . .	77,276	6,131 35	2,553
Murray. . . . .	13,231	655 01	651
Trent. . . . .	36,141	1,095 65	2,135
St. Peter's. . . . .	67,093	2,844 70	1,628
*Sault Ste. Marie. . . . .	4,947,063	Free.	4,268

\* This canal was opened for traffic on 9th September, 1895.

## RAILWAY STATISTICS.

Great difficulty has been experienced, year by year, in getting out the Annual Report of the department, owing to many of the railway companies failing to make the returns required by law and taking no notice whatever of the communications addressed to them from time to time, urging them to forward their returns. Again, this year, a few companies are delinquents in that respect, and I have had to close the Railway Statistics for the year ended 30th June, 1898, without returns from these roads. Their cases have been placed in the hands of the law officers of the Crown to compel them to comply with the law ; the costs of the suits to be charged against them.

TABLE showing the growth of Railways from year to year, since the opening of the first line in 1836.

Year.	Miles in Operation.	Year.	Miles in Operation.
1835.....	0	1867.....	2,278
1836.....	16	1868.....	2,278
1837.....	16	1869.....	2,524
1838.....	16	1870.....	2,617
1839.....	16	1871.....	2,695
1840.....	16	1872.....	2,899
1841.....	16	1873.....	3,613
1842.....	16	1874.....	3,832
1843.....	16	1875.....	4,331
1844.....	16	1876.....	4,804
1845.....	16	1877.....	5,218
1846.....	16	1878.....	5,782
1847.....	54	1879.....	6,126
1848.....	54	1880.....	6,858
1849.....	54	1881.....	7,194
1850.....	66	1882.....	7,331
1851.....	159	1883.....	8,697
1852.....	205	1884.....	9,577
1853.....	506	1885.....	10,275
1854.....	764	1886.....	10,773
1855.....	877	1887.....	11,793
1856.....	1,414	1888.....	12,184
1857.....	1,444	1889.....	12,585
1858.....	1,863	1890.....	13,151
1859.....	1,994	1891.....	13,838
1860.....	2,065	1892.....	14,564
1861.....	2,146	1893.....	15,005
1862.....	2,189	1894.....	15,627
1863.....	2,189	1895.....	15,977
1864.....	2,189	1896.....	16,270
1865.....	2,240	1897.....	16,550
1866.....	2,278	1898.....	16,718

FATAL ACCIDENTS for Year ended 30th June, 1898.

	Passenger Killed.	Employees Killed.	Others Killed.	Total Killed.
Falling from cars or engines.....	3	20	17	40
Getting on or off trains in motion.....		5	12	17
At work making up trains.....		5		5
Putting heads or arms out of windows.....				
Coupling cars.....		11		11
Collisions and derailments.....		23	14	37
Striking bridges.....				
Walking or being on track.....		15	88	103
Explosions.....				
Other causes.....	2	19	36	57
Total.....	5	98	167	270



## Department of Railways and Canals.

The summary of tables for the years ended 30th June, 1897, and 30th June, 1898, is as follows, viz. :—

	Comparative Statement.	
	30th June, 1897.	30th June, 1898.
Miles of railway completed (track laid).....	16,687	16,870
" sidings .....	2,218	2,248
" iron rails in main line .....	210	248
" steel .....	16,477	16,622
" " " double track.....	550	553
Capital paid (including the four following items).....	\$921,858,232	\$941,297,037
Government (Dominion and Provincial) bonuses paid .....	\$159,241,584	\$161,136,218
" " " loans paid .....	\$21,569,149	\$21,569,149
" " (Provincial only) subscription to shares paid).....	\$300,000	\$300,000
Municipal aid paid. ....	\$15,619,868	\$15,660,668
Miles in operation.....	16,550	16,718
Gross earnings.....	\$52,353,276	\$59,715,105
Working expenses.....	\$35,168,665	\$39,137,549
Net earnings.....	\$17,184,611	\$20,577,556
Passengers carried.....	16,171,338	18,444,049
Freight carried (tons). ....	25,300,331	28,785,903
Train mileage.....	45,780,851	50,658,283
Passengers killed.....	7	5
Number of elevators .....	93	108
" guarded level crossings—public roads.....	167	171
" unguarded " " .....	11,239	11,646
" overhead bridges.....	421	432
" level crossings of other railways.....	230	243
" junctions with other railways .....	327	349
" " branch lines .....	219	227
" engines owned.....	2,006	2,026
" " hired .....	90	86
" sleepers and parlour cars owned.....	189	188
" " " hired .....	37	38
" first class cars owned.....	1,047	1,176
" " hired.....	38	38
" second class and immigrant cars owned.....	684	623
" " " hired .....	4	5
" baggage, mail and express cars owned.....	663	647
" " " hired.....	11	21
" refrigerator cars owned.....	300	398
" cattle and box freight cars owned. ....	34,939	35,459
" " " hired.....	2,532	3,361
" platform cars owned. ....	15,149	15,864
" " hired. ....	203	442
" coal and dump cars owned.....	4,831	5,181
" " " hired .....		
" conductors vans owned.....	942	1,017
" " hired.....		7
" tool cars owned.....	112	202
" " hired.....		3
" snow ploughs owned.....	100	292
" " hired .....		2
" flangers owned.....	145	154
" " hired.....		1

I have the honour to be, sir, your obedient servant,

COLLINGWOOD SCHREIBER,

*Deputy Minister and Chief Engineer of Railways and Canals.*

The Honourable A. G. BLAIR,

Minister of Railways and Canals.

No. 1.

RAILWAYS.

INTERCOLONIAL RAILWAY OF CANADA.  
OFFICE OF THE GENERAL MANAGER,  
MONCTON, N. B., 24th Sept., 1898.

SIR,—I have the honour to submit the following report on the working of the Intercolonial Railway during the fiscal year ended 30th June, 1898.

I inclose the reports of the Chief Engineer and the Mechanical Superintendent, and the following statements prepared by the Chief Accountant and Treasurer:—

- No. 1. Capital account.
- 2. Revenue account.
- 3. Locomotive power.
- 4. Car expenses.
- 5. Maintenance of way and works.
- 6. Station expenses.
- 7. General charges.
- 8. General stores account.
- 9. General balance.
- 10. Comparative statement of averages.
- 11. Special votes.

The length of railway in operation during the eight months from July 1st, 1897, to February 28th, 1898, was the same as last year, 1145·46 miles.

From the 1st March, 1898, to the 30th June, 1898, the length of railway in operation was 1314·87 miles. The increase of length is due to the extension of the railway to the city of Montreal.

This extension was made by way of the Drummond County Railway and of the Grand Trunk Railway. The entire line of railway owned by the Drummond County Railway Company, and extending from Chaudière Station to Ste. Rosalie Junction, a distance of 115·93 miles, with the branch to Nicolet, 14·68 miles, was acquired by lease from that company; and the right was acquired by lease from the Grand Trunk Railway Company of using jointly with them their line of railway, and all its appurtenances, between Chaudière Curve and Chaudière Station, 1·18 miles, and between Ste. Rosalie and Montreal, 37·62 miles, including the Victoria Bridge and all terminal premises and connections of that company in the city of Montreal and on the island of Montreal.

The Intercolonial Railway entered into possession of the Drummond County Railway on the 1st March, 1898, and on the same day commenced to exercise the rights acquired under the lease from the Grand Trunk Railway Company and run its trains to and from the city of Montreal.

CAPITAL ACCOUNT.

The total cost of road and equipment on the 30th June, 1897, by last report, was \$55,416,157.15.

The additions during the year were as follows:—

Increased accommodation at Halifax.....	\$	56,651	93
“ “ at Moncton.....		94,943	08
“ “ at St. John.....		2,099	02
“ “ at Causapsca.....		227	85
“ “ at Lévis.....		300	31



## Department of Railways and Canals.

Indiantown branch .....	\$ 4,455 67
Rolling stock.....	5,565 97
Additional rolling stock.....	49,000 00
Two dining cars.....	10,944 95
Land and damages along the Oxford and New Glasgow and the Cape Breton Railways.....	289 87
Rest houses at engine stations.....	141 78
Extension of Halifax Cotton Factory branch.....	1,278 29
Extension to deep water at North Sydney.....	19,820 48
Dredging deep water terminus, St. John.....	3,926 50
Paid the harbour commissioners of Pictou for wharf..	2,721 50
Exchequer Court award <i>re</i> Murdoch McPhee, Cape Breton Railway.....	389 60
	\$252,756 80

Making the total cost on the 30th June, 1898, \$55,668,913.95.

*Increased accommodation at Halifax.*—This expenditure was for dredging and grading, for making roads for hauling freight and paving them with granite, for building a retaining wall of stone masonry along the Campbell Road, and putting an iron fence on it, for completing the warehouse on the coal wharf and fitting it for the electric light, and for providing creosoted piles and southern pitch pine timber for wharfs.

*Increased accommodation at Moncton.*—This is for the erection of a brick and stone passenger station, the rearrangement of tracks and laying of new tracks, laying concrete platforms, and grading, draining and paving yard and roads about the freight house and passenger station.

*Increased accommodation at St. John.*—This is to pay a judgment of the Exchequer Court and taxed costs in the case of C. W. Drury *vs.* The Queen for a piece of land.

*Increased accommodation at Causapscal.*—This is for extending a siding at that place.

*Increased accommodation at Lévis.*—This is for the services and expenses of engineers surveying and preparing plans.

*Indiantown Branch.*—This is for legal services, engineers' services, and witness' fees in the case of Snowball *vs.* The Queen.

*Rolling Stock.*—This is for the purchase of air brake apparatus and applying the same to freight cars. It was applied to ninety box and ten stock cars. The total number of freight cars now equipped is 1,518.

*Additional Rolling Stock.*—This is the cost of four new locomotives purchased as an addition to the stock, for the purpose of hauling fast passenger trains.

*Two Dining Cars.*—This is the cost of changing first-class passenger cars into dining cars and equipping the same.

*Rest Houses at Engine Stations.*—This is for fitting up rooms at Ste. Flavie.

*Extension of Halifax Cotton Factory Branch.*—This is for an extension to the exhibition grounds.

*Extension to Deep Water at North Sydney.*—This is for payments to Messrs. Ross & McManus on account of their contract for this work, also for creosoted piles and southern pitch pine timber, for rails and fastenings, and track laying and for dredging.

*Dredging at deep water terminus, St. John.*—Of this amount \$154 was paid for the services of a diver, the balance was paid to the Department of Public Works for dredging.



REVENUE ACCOUNT.

The gross earnings and working expenses for the year compare as follows:—

Working expenses .....	\$3,257,618 51
Gross earnings .....	3,117,669 85

Deficiency .....	\$ 139,978 66
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The gross earnings compare as follows with those of the previous year:—

In 1897-98 .....	\$3,117,669 85
In 1896-97 .....	2,866,028 02

Increase .....	\$ 251,641 83
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The earnings from passenger traffic compare as follows:—

In 1897-98 .....	\$ 1,053,864 64
In 1896-97 .....	979,005 57

Increase .....	\$ 74,859 07
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The earnings from freight traffic compare as follows:—

In 1897-98 .....	\$ 1,857,740 06
In 1896-97 .....	1,687,050 42

Increase .....	\$ 170,689 64
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The earnings from mails and express freight compare as follows:—

In 1897-98 .....	\$ 206,065 15
In 1896-97 .....	199,972 03

Increase .....	\$ 6,093 12
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In considering the above comparisons it has to be borne in mind that during four months of the year 1897-98 there were 169·81 miles more of railway in operation than during the previous year.

The earnings by mile of railway compare as follows:—

In 1897-98 .....	\$ 2,594 53
In 1896-97 .....	2,503 03

Increase .....	\$ 91 45
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The earnings by train mile compare as follows:—

	cents.
In 1897-98 .....	78·82
In 1896-97 .....	75·83

The number of passengers carried compares as follows:—

In 1897-98 .....	1,528,444
In 1896-97 .....	1,501,690

Increase .....	26,754
----------------	--------

The increase was in both local and through passengers.

The weight of freight carried compares as follows:—

	Tons.
In 1897-98 .....	1,434,576
In 1896-97 .....	1,296,028

Increase .....	138,548
----------------	---------

The increase was in both through and local freight.

## Department of Railways and Canals.

The following is a comparative statement of a few of the chief articles of freight, showing the quantity carried in this and in the previous year:—

	1896-97.	1897-98.	Increase.	Decrease.
Barrels of flour and meal . . . . .	847,701	987,408	139,707	
Bushels of grain . . . . .	1,093,499	1,551,372	457,873	
Lumber in superficial feet . . . . .	243,355,725	254,093,816	10,738,091	
Head of live stock . . . . .	72,082	89,301	17,219	
Coal in tons . . . . .	383,362	369,949		13,413
Manufactured goods in tons . . . . .	313,818	319,608	5,790	
Cords of firewood . . . . .	14,971	29,896	14,925	
All other articles in tons . . . . .	152,791	234,278	81,487	

There was an increase in the quantity of the following articles carried: Flour and meal, grain, lumber, firewood, live stock, ore, lime and cement, plaster, bricks, iron and other metals, potatoes, butter and cheese, eggs, fresh and dried fish, canned lobsters, molasses and refined sugar, pork both fresh and salted, beef and other meat salted, hides and skins and oil, and a decrease in the quantity of the following: Coal, stone, turnips, beets and carrots, hay and straw, pickled fish, oysters, raw sugar, beef and other meat (except pork) fresh, and leather.

### WORKING EXPENSES.

The working expenses compare as follows with the previous year:—

In 1897-98 . . . . .	\$3,257,648 51
In 1896-97.. . . .	2,925,968 67
Increase. . . . .	<u>\$ 331,679 84</u>

The averages compare with those of last year as follows:—

Per mile run by engines:—	Cents.
In 1897-98. . . . .	66·87
In 1896-97. . . . .	62·85
Per mile run by trains:—	
In 1897-98. . . . .	82·37
In 1896-97. . . . .	77·42
Expenditure per mile of railway:—	
In 1897-98. . . . .	\$ 2,711 02
In 1896-97 . . . . .	2,555 43

The rent payable to the Drummond County Railway Company and to the Grand Trunk Railway Company is not included in the above, as it would disturb the comparison with previous years; no corresponding charge relating to the cost of any portion of the railway having ever before been included in the working expenses.

The permanent way and structures and all the works of the railway received thorough repairs and are in good order.

The number of ties renewed was 650,135.

One hundred and twenty-two miles of track were reballasted.

The relaying of the track with new and heavier steel rails was continued, and nineteen and a half miles of track were laid with new rails weighing sixty-seven pounds to the yard.

Two and a half miles of new sidings were laid at various places.

The bridges on all parts of the line received necessary repairs, and six wooden bridges were taken out and replaced with new steel bridges. One bridge between Moncton and St. John was taken out and a solid embankment was substituted.

The fences received necessary repairs, and forty-two and a half miles of new fences were erected.

The snow sheds and snow fences were repaired, and seven thousand rods of snow fences were renewed.

The wharfs at various places received necessary repairs.

The buildings on all parts of the line received necessary repairs and several new ones were erected.

The rolling stock received necessary repairs and is in good order.

Six locomotives were rebuilt during the year, and eighty-seven received heavy repairs.

Considerable work was done in the railway shops in improving the sleeping and other passenger cars, for the greater comfort of passengers.

The freight cars were repaired, and two hundred and sixty-four were rebuilt.

#### STORES.

The value of stores purchased was.....	\$ 924,973 25
The value of stores used was....	1,271,236 82
The value of old material sold was.....	<u>60,161 32</u>

The value of stores on hand at the end of the year was :—

Ordinary stores, including fuel. ....	\$226,861 16
Iron and steel rails and fastenings. ....	208,547 03
Old material for sale.....	<u>33,054 01</u>

Total.....	<u>\$468,462 20</u>
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#### GENERAL.

The winter of 1897-98 was more stormy than the previous one, especially during the latter portion, and the cost of cleaning snow and ice from the track exceeded that of the previous year by twenty-five thousand dollars. \$25,000

On July 20th, 1897, a portion of one of the snow sheds near Tartague was burned. On the 29th August, 1897, three hundred feet in length of the snow shed west of Harlaka was burned, and on the 24th May, 1898, the station house at Model Farm was burned. All these fires were accidental.

I have the honour to be, sir,

Your obedient servant,

D. POTTINGER,

*General Manager Government Railways.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,

Deputy Minister and Chief Engineer Railways and Canals.



Department of Railways and Canals.

No. 1.—INTERCOLONIAL RAILWAY.

Dr. CAPITAL ACCOUNT, Year ended 30th June, 1898. CR.

1897.		\$	cts.	1897.	\$	cts.	\$	cts.
June 30..	To cost of Intercolonial Railway to date .....	48,145	367 82	June 30..	By Dominion of Canada .....	55,416	157 15	
	" Eastern Extension Railway to date .....	1,324	042 81					
	" Oxford and New Glasgow Railway to date .....	1,950	820 60					
	" Cape Breton Railway to date .....	3,875	250 87					
	" Cape Breton and Oxford and New Glasgow Railways to date .....	57	212 02					
1898.	" Ferry Service at Strait of Canso to date .....	63	463 03					
June 30..	Expenditure for current year:—							
	Increased accommodation, Moncton .....	94	943 08					
	" " Halifax .....	56	651 93					
	" " Lévis .....	300	31					
	" " St. John .....	2	099 02					
	" " Causapscal .....	227	85					
	Land and damages (O. & N. G. & C. B. Rys.) .....	289	87					
	Indiantown Branch .....	4	455 67					
	Extension Halifax Cotton Factory Branch .....	1	278 29					
	Additional Rolling Stock .....	49	000 00					
	Extension to Deep Water, North Sydney .....	19	820 48					
	Rest houses at 9 engine stations .....	141	78					
	Two dining cars .....	10	944 95					
	Dredging Deep Water Terminus, St. John .....	3	926 50					
	Cape Breton Railway, Exchequer Court Award .....	389	60					
	To pay Pictou Harbour Commissioners for wharf .....	2	721 50	1898.				
	Rolling Stock .....	5	565 97					
					252,756	80	252,756	80
					55,668,913	95	55,668,913	95

E. & O. E. T. WILLIAMS,  
MONCTON, N.B., 30th June, 1898. Chief Accountant and Treasurer.

## No. 2.—INTERCOLONIAL RAILWAY.

DR.

REVENUE ACCOUNT, Year ended 30th June, 1898.

CR.

Previous Year.	Expenditure.	Year ended 30th June, 1898.	Previous Year.	Earnings.	Year ended 30th June, 1898.
\$ cts.		\$ cts.	\$ cts.		\$ cts.
995,247 29	Locomotive power, Abst. No. 1.	1,031,630 81	979,005 57	Passenger traffic..	1,053,864 64
708,513 01	Car expenses " 2.	733,366 18	1,687,050 42	Freight traffic ....	1,857,740 06
624,454 43	Mainten'ce way & works " 3.	861,727 62	199,972 03	Mails and sundries	206,065 15
384,982 77	Station expenses " 4.	400,164 67			
207,107 39	General charges " 5.	209,547 59			
5,663 78	Car mileage.....	21,211 64			
2,925,968 67		3,257,648 51	2,866,028 02		3,117,669 85
.....	Balance .....	.....	59,940 65	Balance .....	139,978 66
2,925,968 67		3,257,648 51	2,925,968 67		3,257,648 51

E. &amp; O. E.

MONCTON, N.B., 30th June, 1898.

T. WILLIAMS,

Chief Accountant and Treasurer.

## No. 3.—INTERCOLONIAL RAILWAY.

## LOCOMOTIVE POWER—(Abstract No. 1).

Previous Year.		Year ended 30th June, 1898.
\$ cts.		\$ cts.
12,160 85	Mechanical superintendent's salary, clerks, office and travelling expenses. . . .	13,816 55
267,291 80	Wages of drivers, firemen and cleaners.....	276,117 52
375,635 35	Fuel.....	388,267 88
30,848 49	Oil, tallow and waste and small stores .....	31,424 28
261,880 32	Repairs to engines, tenders and engine tools.....	276,068 39
30,498 81	Water, including pump and tank repairs.....	29,371 80
16,931 67	Miscellaneous .....	16,564 39
995,247 29		1,031,630 81

E. &amp; O. E.

MONCTON, N.B., 30th June, 1898.

T. WILLIAMS,

Chief Accountant and Treasurer.

## No. 4.—INTERCOLONIAL RAILWAY.

## CAR EXPENSES—(Abstract No. 2).

Previous Year.		Year ended 30th June, 1898.
\$ cts.		\$ cts.
84,793 82	Repairs to passenger cars.....	86,371 77
20,976 44	Repairs to postal, express and baggage cars.....	22,276 39
231,203 22	Repairs to freight cars and vans.....	232,118 81
3,771 23	Repairs to snow ploughs and flangers.....	6,308 67
255,465 63	Wages of conductors, train baggage-masters and brakemen.....	265,557 31
22,954 90	Oil and waste for packing.....	17,213 63
60,664 51	Small stores and fuel.....	71,712 71
28,683 26	Miscellaneous .....	31,806 89
708,513 01		733,366 18

E. &amp; O. E.

MONCTON, N.B., 30th June, 1898.

T. WILLIAMS,

Chief Accountant and Treasurer.

Department of Railways and Canals.

No. 5.—INTERCOLONIAL RAILWAY.

MAINTENANCE OF WAY AND WORKS.—(Abstract No. 3.)

Previous Year.		Year ended 30th June, 1898.
\$ cts.		\$ cts.
6,947 14	Chief and asst. engineers' salaries, clerks, office and travelling expenses.....	7,854 32
340,869 04	Wages in repairing roadway, fences, semaphores, including new sidings laid in..	404,230 28
29,165 13	Rails and fastenings, including new sidings laid in .....	67,139 13
60,890 15	Ties. ....	143,932 70
71,160 86	Timber, lumber, &c., for repairs to bridges, cattle-guards, fences, &c.,.....	99,540 05
18,855 11	Repairs to wharfs.....	9,443 16
50,279 25	Repairs to buildings and platforms, including extensions and additions to same.	56,234 47
10,705 50	Repairs to tools.....	11,495 07
33,570 36	Clearing snow and ice.....	58,370 90
2,011 89	Miscellaneous.....	3,487 54
624,454 43		861,727 62

E. & O. E.  
MONCTON, N.B., 30th June, 1898.

T. WILLIAMS,  
*Chief Accountant and Treasurer.*

No. 6.—INTERCOLONIAL RAILWAY.

STATION EXPENSES.—(Abstract No. 4.)

Previous Year.		Year ended 30th June, 1898.
\$ cts.		\$ cts.
305,419 59	Salaries and wages of station-masters, agents, clerks, telegraph operators, station baggage-masters, yard-masters, switchmen and labourers.....	313,414 89
79,563 18	Fuel, oil and light, stationery, ticket and other incidental expenses .....	86,749 78
384,982 77		400,164 67

E. & O. E.  
MONCTON, N.B., 30th June, 1898.

T. WILLIAMS,  
*Chief Accountant and Treasurer.*

No. 7.—INTERCOLONIAL RAILWAY.

GENERAL CHARGES—(Abstract No. 5).

Previous Year.		Year ended 30th June, 1898.
\$ cts.		\$ cts.
87,893 21	General manager's, district superintendent's, train despatcher's, general freight agent's, general passenger agent's salaries, clerks, and their office and travelling expenses.....	93,772 74
30,412 98	Chief accountant and treasurer's, traffic auditor's, paymaster's, cashier's salaries, clerks, and their office and travelling expenses... ..	30,905 52
12,048 00	Damages to men, animals and goods.. ..	8,348 66
27,073 20	Ferry service .....	24,513 00
2,415 44	Telegraph expenses, not including pay to operators.. ..	3,213 34
28,780 85	Miscellaneous, printing, advertising, &c.....	26,630 79
15,453 82	Agency expenses.....	22,163 54
2,999 89	Commissioners investigating (vote \$2,500.00) .....	.....
207,107 39		209,547 59

E. & O. E.  
MONCTON, N. B., 30th June, 1898.

T. WILLIAMS,  
*Chief Accountant and Treasurer.*



No. 8.—INTERCOLONIAL RAILWAY.

DR. GENERAL STORES ACCOUNT—Year ended 30th June, 1898. CR.

1897		\$	cts.	1898		\$	cts.
June 30..	To Balance.....			June 30..	By Issues during year.....	1,271,236	82
1898					Sales, material, fuel, etc., to other railways, etc....	19,571	58
June 30..	To Purchases during the year.....	924,973	25		Sales, old material.....	60,161	32
	Charges from other departments.	199,639	59				
	Labour, etc....	42,179	28		By Balance:—		
	Staff pay rolls.....	13,806	91		Ordinary stores, including fuel....	226,861	16
					Iron and steel rails and fastenings..	208,547	63
					Old material for sale.....	33,054	01
						468,462	20
						1,819,431	92

E. & O. E.

MONCTON, N. B., 30th June, 1898.

T. WILLIAMS,

Chief Accountant and Treasurer.

# No. 9.—INTERCOLONIAL RAILWAY.

Dr.

GENERAL BALANCE, Year ended 30th June, 1898.

Cr.

To Cash .....	\$	cts.	By Dominion of Canada .....	\$	cts.
Stations .....	1,285	38	Suspense .....	734,874	77
General Stores—	74,937	44	Chatham Railway .....	4,300	38
Ordinary stores, including fuel.....	\$226,861	16	Canadian Pacific Railway—traffic .....	0	07
Iron and steel rails and fastenings .....	208,547	03	Prince Edward Island Railway .....	1,350	38
Old material for sale.....	33,054	01	Pullman Palace Car Company .....	7,419	57
Department accounts—			Coldbrook Rolling Mills Company (new account).....	44	70
Militia and Defence.....	\$	3,759	Temiscouata Railway.....	0	10
Post Office.....		38,007	Central Railway of New Brunswick .....	3	68
Public Works.....		3	Drummond County Railway.....	37	06
				8,672	39
Canadian Pacific Railway rolling stock .....					
St. Martin's and Upham Railway.....					
Dominion Atlantic Railway—general .....	\$	1,634			
" " —traffic.....		1,150			
		40			
Canada Eastern Railway—general.....	\$	5,346			
" " —traffic.....		5,891			
		09			
Canadian Pacific Railway—general.....	\$	11,606			
" " N. B. Division—general.....		5,441			
" " —traffic.....		1,334			
		20			
Quebec Central Railway.....					
Grand Trunk Railway—general .....	\$	6,122			
" " —traffic .....		2,134			
		19			
Caraguet Railway .....					
Rents.....					
Unclaimed freight .....					
Bay Chaleur Railway.....					
New Brunswick and Prince Edward Island Railway .....					
Union Tank Line.....					
Boston and Maine Railway.....					
Buctouche and Moncton Railway .....					
Salisbury and Harvey Railway .....					
Tobique Valley Railway .....					
Maine Central Railway .....					
Canada Atlantic Railway.....					
Chicago, Cincinnati, C. and St. L. Railway.....					
Imperial Tank Line.....					
Michigan Central Railway .....					

No. 9.—INTERCOLONIAL RAILWAY—Continued.

Dr.

GENERAL BALANCE, Year ended 30th June, 1898.

Cr.

\$ cts

To	Flint and Père Marquette Railway.....	1 14
	Wabash Railway.....	2 92
	Kent Northern Railway.....	20 90
	Armour Car Lines.....	0 27
	Central Vermont Railway.....	0 10
	New York Central and Hudson River Railway.....	12 30
	National Despatch Line.....	1 80
	Sherbrooke Tank Line.....	0 29
	Lake Shore and Michigan Southern Railway.....	1 81
	Prince Edward Island Steam Navigation Company.....	5 91
	Merchants' Despatch Transportation Company.....	4 81
	New York and New England Railway.....	9 16
	Continental Fruit Express Company.....	0 27
	Detroit, Grand Haven and M. Railway.....	1 50
	National Car Company.....	1 74
	International Steamship Company.....	3 03
	Western Counties Railway—general.....	\$ 15,893 35
	" " —traffic.....	64 57
	Springhill and Parrsboro Railway.....	15,957 92
	Halifax and Cape Breton Railway.....	3,161 99
	Elgin Branch Railway.....	1,151 42
	Canadian Express Company.....	726 10
	Dominion Express Company.....	4,546 65
	Intercolonial Coal Company.....	0 20
	Cumberland Railway and Coal Company.....	1,043 56
	Canada Coals and Railway Company.....	437 64
	Dominion Coal Company.....	14 24
	Acadia Coal Company.....	157 00
	Nova Scotia Steel Company.....	676 99
	Steamer "Admiral".....	3,679 42
	Steamer "Monticello".....	1,863 73
	I. C. R. Employees' R. and Insurance Association.....	572 40
	Car "Victoria".....	99 39
	Car "Ottawa".....	346 64
	Canadian Locomotive and Engine Company.....	5 50
	Portland Rolling Mills Company.....	320 00
	St. François Bridge Company.....	3,233 50
	Baldwin Locomotive Works.....	49 59
	Schooner "Soudan" and owners.....	181 10
	Western Union Telegraph Company.....	139 01
	Allan Steamship Line.....	110 87
	Union Bearing Company.....	1,892 13
		928 18



Department of Railways and Canals.

Halifax Cotton Company Siding.....	5,801 97
Poulson Iron Works.....	273 25
Town of Dartmouth.....	32,000 00
St. John Street Railway Company.....	31 00
Ontario Car and Foundry Company.....	1,276 00
Remittances destroyed.....	788 81
Schooner "Mary Jane".....	71 30
Coldbrook Rolling Mills Company.....	1,967 41
Stations--	
Nauwigewank.....	\$ 3 00
Glengarry.....	5 00
Bloomfield.....	25 21
Coal Branch.....	65 84
Weldford.....	55 00
Ste. Lucie.....	80 00
Bic.....	22 00
St. Arsène.....	107 12
Dalhousie.....	19 69
Valley.....	6 65
Iona.....	72 71
Nappan.....	40 00
Kent Junction.....	28 38
Isle Verte.....	25 00
Gloucester Junction.....	48 87
Campbellton (freight).....	25 00
Derby Junction.....	231 04
Individual accounts.....	890 51
Total.....	7,847 41
Total.....	756,703 10

E. & O. E.

MONCTON, N. B., 30th June, 1898.

T. WILLIAMS,

Chief Accountant and Treasurer.

No. 10.—INTERCOLONIAL RAILWAY.

COMPARATIVE STATEMENT OF AVERAGES, YEAR ENDED 30TH JUNE, 1898.

	1897.	1898.
Mileage of railway . . . . .	1,145	1,201·63
Engine mileage . . . . .	4,655,171	4,871,387
Train mileage . . . . .	3,779,283	3,955,009
Car mileage . . . . .	40,823,781	43,189,745
Receipts per engine mile . . . . . Cents	61·56	64·00
Receipts per mile of railway . . . . . Dollars	2,503 08	2,594 53
Percentage of passenger earnings to gross earnings . . . . .		
" freight " " . . . . .	34·16	33·80
" other " " . . . . .	58·86	59·59
	6·98	6·61
Expenses per engine mile :—		
Drivers, firemen and cleaners' wages . . . . . Cents	5·74	5·67
Fuel . . . . . "	8·07	7·97
Oil, tallow, waste and small stores . . . . . "	·66	·65
Repairs to engines . . . . . "	5·63	5·67
Water and tank repairs . . . . . "	·66	·60
Miscellaneous . . . . . "	·36	·34
Total . . . . .	21·12	20·90
Mechanical superintendent's salary, office and travelling expenses . . . . .	·26	·28
Total . . . . .	21·38	21·18
Locomotive power per engine mile . . . . . Cents	21·38	21·18
Car expenses " " " " " "	15 22	15·05
Maintenance way and works per engine mile . . . . . "	13 41	17·69
Station expenses " " " " " "	8·27	8·21
General charges " " " " " "	4·45	4·30
Car mileage " " " " " "	·12	·44
Total per engine mile . . . . .	62·85	66·87
Locomotive power per train mile . . . . . Cents	26·33	26·08
Car expenses " " " " " "	18·75	18·54
Maintenance way and works per train mile . . . . . "	16·52	21 79
Station expenses " " " " " "	10·19	10·12
General charges " " " " " "	5·48	5·30
Car mileage " " " " " "	·15	·54
Total per train mile . . . . .	77·42	82·37
Working expenses per mile of railway . . . . . Dollars	2,555 43	2,711 02

E. & O. E.  
MONCTON, N.B., 30th June, 1898.

T. WILLIAMS,  
*Chief Accountant and Treasurer.*

Department of Railways and Canals.

No. 11.—INTERCOLONIAL RAILWAY.

SPECIAL VOTES—Abstract No. 6.

	Four months ended 30th June, 1898.
	\$ cts.
Rent of Grand Trunk Railway—Chaudière Curve to Chaudière, and Ste. Rosalie to Montreal, including the Victoria Bridge and terminals at Montreal. ....	46,666 68
Rent of Drummond County Railway—Chaudière to Ste. Rosalie and the Nicolet Branch, operated as part of the Intercolonial Railway .....	23,333 32
Total. ....	70,000 00

E. & O. E.  
MONCTON, N. B., 30th June, 1898.

T. WILLIAMS,  
*Chief Accountant and Treasurer.*



INTERCOLONIAL RAILWAY OF CANADA,  
OFFICE OF THE CHIEF ENGINEER,  
MONCTON, N.B., 8th September, 1898.

SIR,—I have the honour to submit the report of the Engineering Department for the year ending 30th June, 1898.

TRACK.

During the year  $19\frac{1}{3}$  miles of track laid with old  $4\frac{1}{2}$  in. steel rails, weighing 58 lbs. to the yard, were taken up and replaced with new  $4\frac{1}{2}$  in. rails, weighing 67 lbs. to the yard. Also  $6\frac{1}{2}$  miles of track laid with 67 lb. worn rails, were taken up and the rails cut and relaid on various parts of the line.

TIES.

During the year 650,135 ordinary ties and 120 sets of switch ties were removed.

BALLASTING.

103,166 cubic yards of ballast have been placed on various parts of the line where necessary during the past year.

SEMAPHORES AND SWITCHES.

Distant semaphore signals have been renewed at the following stations: Enfield, Thomson, Painsec Junction, Petitcodiac, Penobsquis, Cold Brook, St. John, New Mills, Petite Roche, Dalhousie Junction, Causapscal, Sayabec, Kempt, Little Metis, Ste. Flavie and Chaudière Junction. Station signals have been renewed at Canaan, Rogersville, Petite Roche, Bathurst, Red Pine, Bartibogue, Newcastle, New Mills, Dalhousie Junction and Sayabec.

Necessary repairs were made to semaphores, switches and station signals throughout the line.

SIDINGS.

During the year  $2\frac{1}{2}$  miles of additional siding accommodation were provided at various points along the line.

FENCING.

Forty-two and a half miles of new barbed wire and woven wire fence were erected, replacing pole fence and old barbed wire fence.

Extensive repairs were made to the old fences on all parts of the line.

SNOW SHEDS AND SNOW FENCES.

During the year 7,062 rods of snow fence were renewed in the Central and Northern Divisions. Necessary repairs were made to snow sheds and snow fences where required throughout the line.

WHARFS AND TRESTLES.

At Richmond at shore end of curved wharf, crib constructed to replace pile approaches from shore was partly filled in by an earth embankment. Ballast was also placed in crib-work on shore end of pier No 7.

## Department of Railways and Canals.

A new freight shed was erected on coal trestle wharf D. W. terminus, 431 feet by 34 feet.

At the deep water terminus a new coal drop was erected and necessary repairs made to the coal chutes.

At Richmond the coal trestle was overhauled, blocked up and strengthened.

At Pictou Landing some slight repairs were made to wharf.

At Mulgrave about 40 x 20 feet of outer end of wharf was planked up level with the top of rails to facilitate the handling of baggage. The sheathing was removed on north corner of wharf and 5 new fenders were placed on inside of wharf.

About 140 x 15 feet of top of old wharf was re-planked and timbers under track renewed.

A portion of the crib-work on shore side of dock, damaged by the barge, was renewed, and about 150 cubic yards of ballast put in crib.

At Point Tupper the wharf was overhauled and repaired where necessary.

At Dorchester the wharf was repaired, new fenders provided and replanked with 4 inch hemlock deals.

The coal trestles at Dorchester, Amherst and Spring Hill were overhauled and repaired.

At Pointe du Chêne the wharfs were overhauled and repaired where necessary.

### BUILDINGS AND PLATFORMS.

At Halifax the outside platform was renewed at north end of station and a new platform was provided at the cabmen's stand. A portion of the old wooden platform inside north end of new shed of station, 150 x 18 feet, was taken up, and the space filled with cinders and covered with asphalt. A hard pine timber curb was placed on the outside.

Necessary repairs were made to the broken glass in windows of roof and sides of train shed; repairs were also made to the baggage room. A new floor was laid in the I. C. R. ticket office on Hollis Street.

At Richmond extensive repairs were made to the engine house to cover damages done by a boiler explosion, the roof and part of the wall being entirely rebuilt. Several of the ash pits were overhauled and repaired where necessary.

One side of the roof of cattle shed was renewed with shingles and the old wooden floor taken up and replaced with stone rubble and water-pipes connected with the city supply. A new platform was provided.

Extensive repairs were made to the coal shed at Young Street.

A portion of the roof of machine shop was reslated.

Necessary repairs were made to the mechanical foreman's house and a new hardwood floor laid in front room.

A new floor was laid in the office of the D. A. R. freight shed and other necessary repairs made to building.

At Princess Lodge a new flag station was erected.

At Bedford the agent's dwelling apartments were overhauled and repaired.

At Windsor Junction the platform was renewed.

At Elmsdale a kitchen was provided and a new cattle shed built.

At Shubenacadie, one side of station roof was resingled and the loading platform repaired.

At Stewiacke roof of station agents apartments was resingled.

At Brookfield the loading platform was repaired.

At Truro new hardwood floor was laid in the ladies waiting room and telegraph office, and other necessary repairs made to the building.

Necessary repairs were made to the flooring, windows and spouting of freight-shed. The engine-shed, car-shed and trackmaster's shop were overhauled and repaired.

At West River one-half of roof of station was resingled.

At Eureka the platform was extended 50 feet and a new w.c. provided.



At Stellarton the roofs of engine shed and turntable shed were partly recovered with shingles, and the I. C. R. tenement houses overhauled and repaired.

At New Glasgow the canvas covering of projection of new station was repaired and painted, also roof of baggage room, and other slight repairs made to station building; 150 x 11 feet of the passenger platform was renewed and three new doors made in front side of freight shed to facilitate the handling of freight.

At Merigomish new floors and new sills were placed in station.

At Dewis Mills the end and one side of the flag station were double boarded to keep out snow and rain, and the platform repaired.

At Marshy Hope the platform was overhauled and repaired.

At Brierly Brook the platform was renewed and repairs made to the flag station.

At Antigonish the passenger and freight platforms were overhauled and repaired and the roofs of baggage room and freight shed painted.

At Harborau Bouche the station was overhauled, repaired and the roof painted.

At Mulgrave the station was overhauled, repaired and painted. Necessary repairs were made to the passenger and freight platforms. The roof of engine shed was overhauled and repaired.

At Atkins Crossing, on the Pictou Landing branch, a platform 60 x 8 feet was erected to accommodate the public at this place.

At Ottawa Brook siding a new platform was erected.

Necessary repairs were made to all station buildings and platforms between Point Tupper and Sydney.

At Pictou some changes were made in the gangway to facilitate the handling of passengers and freight per Prince Edward Island Steamship Company's boats.

At Wallace Bridge a new station building was erected, and the old shelter formerly used here was moved to Fountain Road Platform and set up there for passenger accommodation.

A shelter shed was also provided at Granton's Crossing.

Necessary repairs were made to all platforms between Oxford Junction and Pictou.

At Belmont the loading platform was lowered, and passenger platform overhauled and repaired.

At Debert the passenger platform was renewed.

At Oxford Junction a new loading platform 70 feet long was erected and a modern w.c. provided for the ladies' waiting room.

At Folleyh new sills were placed under the station, the roof was renewed with shingles, and a new floor laid in dwelling apartments of station.

At Spring Hill Junction an additional engine-house, 70 x 21 feet, was erected and a stone ash pit provided for it.

At Dorchester Station an addition was made for a kitchen and the old baggage room converted into a dining room for the use of the station master.

At Memramcook the passenger platform was renewed.

At Apohaqui and Penobsquis stations the interior of station buildings was rearranged to provide better accommodation for the station masters.

At Quispamsis the station building was overhauled, repaired and raised two feet.

All other station buildings between St. John and Moncton were overhauled and repairs made where necessary.

At Moncton the new brick and stone passenger station let to contract to Messrs. Rhodes, Curry & Co., of Amherst, is nearly completed, the work having been carried steadily along during the winter months.

The plumbing and heating of the building was let by contract to F. S. McManus, of St. John, and this work is also well on towards completion.

An asphalt platform with foundation of concrete is being laid around the new station building and also throughout the entire length of the covered ways on either side and in front of station. Planking is being laid down between the curbs of platforms in front of station the full length of the covered ways.



## Department of Railways and Canals.

As referred to in last year's report, the freight shed was moved across the yard from the north to the south side. Previous to its removal, new sills were placed under shed where found necessary. A pile foundation was provided for shed at the new site, and after capping piles the building was placed thereon.

A new loading platform was provided at northern end of freight shed, and a roadway 685 feet long and 50 feet wide was made, extending from a point near the western end of shed to junction with Foundry Street. This roadway was built with cedar blocks in the centre 30 feet wide, with a filling of broken stone covered with gravel for a width of 10 feet on each side of cedar blocks. A narrow platform, 3 feet wide was placed the full length of the western side of freight shed to facilitate the loading and unloading of freight.

The unclaimed baggage and freight shed was also moved across the tracks and placed in position at the southern end of freight shed.

The work of shifting and re-laying tracks, owing to the change in location of station and freight shed, has been pushed along vigorously, and the work of grading and laying out the station grounds on the north or city side of station, is well under way.

The necessary repairs have been made to the floors of machine shops and also to all other buildings where required.

At Kent Junction an extension was made to the passenger platform 160 feet long by 5 feet wide.

At Chatham Junction new sills were placed under the station building, and the roof of freight house repaired.

At Indiantown a new kitchen was built to station, and one side of roof of engine shed was recovered with shingles.

At Derby Junction a new loading platform 170 x 18 feet was erected.

At Newcastle 4 new skylights were placed in the roof of coal shed, and a new loading platform 170 x 12 feet was put up at Newcastle wharf to facilitate the handling of lumber, &c. Five engine pits were repaired in round house and roof overhauled and repaired.

All passenger and freight platforms between Moncton and Newcastle were overhauled and repaired.

At Beaver Brook the upper part of station was fitted up for dwelling apartments for station agent.

At Bathurst the freight house and coal shed were overhauled, repaired and painted, brick work of station overhauled and repaired, and 15 storm sashes provided.

At Petite Roche the roof of station was repaired and painted.

At Jacquet River the dwelling apartments of station were overhauled and repaired, and roof of station painted. The station platform was renewed.

At New Mills the station was overhauled and repaired, and roof of freight shed reshingled and painted. Seven storm sashes were provided for station.

The platforms of the following stations were overhauled and repaired: Bartibogue, Red Pine, Bathurst, Culligan's Siding, Charlo and Dalhousie Junction.

At Campbellton the engine house pits were overhauled and repaired. The floor of round house was overhauled and repaired, and general repairs were made to dwelling apartments of station agent. The station platform was extended 100 feet and necessary repairs were made to the freight house and loading platforms.

At Flatlands a new hardwood floor was laid in the station.

At Metapedia the station was overhauled and repaired; the freight house platform also received some repairs.

At Causapscau repairs were made to the floors, windows and doors of station building, and some extension was made to the station platforms.

At Cedar Hall the floor of coal shed was overhauled and repaired.

At Sayabec a well was provided to supply the station agent with water for domestic purposes.

The station platforms at Amqui, St. Moïse, and Little Métis, received necessary repairs.

At Ste. Flavie extensive improvements and alterations were made to the interior station, to provide better accommodation for the station agent. The exterior of station was also overhauled and repaired.

Necessary repairs were also made to the coal shed and round house, and two large doors provided for the latter.

At Rimouski the roof of station was reshingled and platform repaired.

At Sacré Cœur and Bic the platforms were renewed.

At Cacouna necessary repairs were made to the station platform.

At Rivière du Loup the oil house was overhauled and repaired. A drain was laid from the round house to the river and a pair of new doors were provided.

At Ste. Hélène and St. Phillipe de Néri new water closets were provided.

At Ste. Anne the station platform was renewed.

At L'Islet a new cattle yard was provided.

At Montmagny the station platform was extended 100 feet, a new floor was laid in the ladies' waiting-room, and a new loading platform was provided.

At St. Michel the station platform was renewed, a new cattle yard provided and new foundation timbers placed under station building.

General repairs were made to all other buildings between Rivière du Loup and Lévis.

#### BRIDGES, CULVERTS, &C.

A box culvert was rebuilt near Alton and a stone foundation provided for the new tank building put up at this place.

Stone culverts, which had broken down, between Brookfield and Truro were rebuilt.

At Pine Tree Bridge two bents were strengthened at west end and one new bent put at east end of bridge.

At Little Gut the 20 foot wooden span bridge was replaced by a steel rolled beam bridge with standard pitch-pine floor and guard rails.

Near Merigomish a 2 x 3 feet cedar box culvert 24 feet long was built in place of a 11 foot wooden beam culvert.

The covers of two stone box culverts near Avondale which had broken down were repaired.

Grant's pile bridge near Marshy Hope Station was replaced by a 30 foot steel plate girder with cedar abutments and loose stone filling. A standard pitch-pine floor and guard rails were put on.

New stringers and wall-plates were put in the 17 foot beam culvert half a mile west of Antigonish Station.

The 20-foot wooden span at Murphey's Mills was replaced by a steel rolled-beam bridge with standard hard pine floor.

Murphey's wooden Howe truss bridge was strengthened by two additional wooden bents.

The wooden pile bridge at Giles Cove was overhauled and repaired.

At Pomquet the wooden trestle bridge was replaced with a 64 feet steel through plate girder, with standard pitch-pine floor and guard rails.

At Little River the 40 foot wooden Howe truss bridge was renewed and replaced by a steel deck plate girder, with standard floor and guard rails.

At Pirate Harbour bridge a 3 x 4 cedar box culvert 60 feet long was placed under roadway and the old timber roadway 90 x 20 feet filled in.

At Folleigh bridge 292 lineal feet of the hard pine top was renewed and guard rails provided; the lateral bracing of the bridge was overhauled and repaired and all loose rivets tightened.

Two wooden frame bents were placed under the 100 foot iron deck lattice bridge at Little Forks.

At Sackville piles were driven around one of the abutments of bridge, waling pieces put on and the wooden casings placed around abutment to protect it from the ice.

At Aulac the wooden trestle bridge was overhauled and repaired.



## Department of Railways and Canals.

A new pitch-pine floor was put on Palmer's overhead steel deck bridge.

Two wooden pile bents were placed under the 60 foot deck pin-connected iron bridge over the Memramcook River near Calhoun's Mills.

Four culverts between Truro and Painsec Junction were renewed with hard-pine stringers and cedar wall plates.

A new hard pine floor was placed on Harris's Mill stream bridge 3 miles east of Moncton.

The wooden bridge 28 foot span east of Hampton station, was renewed with hard pine.

McCully's overhead bridge, near Torryburn, had a new top put on.

Dougherty's wooden bridge, near Quispamsis, was renewed and replaced steel rolled beam 31 feet long, with standard hard pine floor and guard rails.

McKinley's bridge,  $1\frac{1}{2}$  miles east of Rothsay, was filled in with an earth embankment and a stone double box culvert 70 feet long, with openings 4 feet by 6 feet each, built by contract.

A box culvert 4 feet x 4 feet x 50 feet long was built under Canada Eastern track to drain water from Intercolonial Railway grounds at Chatham Junction.

Sixteen new hard pine ties were placed on top of South Branch bridge near Coal Branch.

All the piers of the North and South Miramichi bridges were overhauled and pointed with Portland cement.

Five new stones were placed under girders of Tetagouche bridge to replace others that were broken.

Six stone culverts between Newcastle and Campbellton were overhauled, repaired and pointed.

New hard pine floors, with guard rails, were placed on Moffat's and Adam's bridges.

Amqui bridge was overhauled and repaired with hard pine timber where required.

Some slight repairs were made to woodwork of Little Metis bridge and a quantity of stone riprap placed around bottom of centre pier.

Stone culverts between Campbellton and Ste. Flavie were overhauled and repaired where found necessary.

The wooden overhead bridge at cut east of Trois Pistoles station, was overhauled and repaired.

Necessary repairs were made to the cribwork on the west side of Trois Pistoles River bridge and a quantity of stone ballast put in crib.

At Rivière du Loup the bridge abutments were overhauled and pointed. The cribwork was also repaired.

All culverts between Ste. Flavie and Rivière du Loup were overhauled and repaired where necessary.

A new cedar box culvert was put in at St. Henri.

Two stone culverts were rebuilt, and six repaired between Rivière du Loup and Lévis.

During the working season, a gang of rivetters have been out tightening up rivets and putting in lateral bracing and making the necessary repairs to iron bridges.

The following bridges were overhauled, scraped and painted two coats:—

North Branch Charlo River bridge.. ..	3 spans	50 feet.
South do do do do .....	2 do	50 do
Morton's Mill Race bridge.....	1 do	30 do
Louison Brook do .....	1 do	50 do
Belledune do .....	2 do	60 do
Red Pine do .....	3 do	40 do
Rogersville overhead do .....	1 do	100 do
Plate girder bridge (near Derby) .....	1 do	30 do
Shaw's bridge.....	1 do	18 do
Dorchester bridge.....	1 do	15 do



## GENERAL.

At Campbell Road, Halifax, a quantity of rock was excavated to widen track at this point and rock taken to put in cribwork at shore end of curved wharf Richmond. A retaining wall 175 feet long was built at this point and an iron railing placed on top of wall.

Considerable dredging was done in docks on north and south side of Pier No. 4, D. W. Terminus, Halifax.

800 square yards of granite block paving was laid between the brick freight shed crossing at the Deep Water Terminus and the Marine and Fisheries Buildings.

A new close board fence was erected between the Railway and Cunard's boundary, 123 feet long and 6 feet high, and topped with two rows of barbed wire.

At Deep Water Terminus two new crossings were laid to shed on pier No. 4.

Necessary repairs were made to the staging at boat landings at the Deep Water Terminus.

At North Sydney Junction a turntable was put in to facilitate the handling of snow ploughs in winter.

At Dorchester a water supply was put into station for domestic purposes, 1,300 feet of 2 in. galvanized iron pipe was used for this purpose.

Heavy repairs were made to Crowsan's and Brownell's aboisdeaux on the Central division.

A large number of cattle guards were renewed, and necessary repairs made to others throughout the whole line.

A new 50 ton track scale was put in at Campbellton and the track scales at different points on the line were overhauled from time to time, and adjusted.

The distant semaphores, signals, switches and station signals throughout the line were thoroughly overhauled and painted where it was found necessary to do so.

## DRUMMOND COUNTY RAILWAY.

The Drummond County Line between Chaudière and Ste. Rosalie was taken possession of by the Dominion Government on the first day of March, 1898. The work of bringing both the old and the new parts of line up to the standard was commenced on the 12th of May and is still being proceeded with.

I have the honour to be, sir,

Your obedient servant,

WM. B. MACKENZIE,

*Chief Engineer.*

D. POTTINGER, Esq.,

General Manager, Government Railways,  
Moncton, N. B.

# Department of Railways and Canals.

## INTERCOLONIAL RAILWAY OF CANADA, OFFICE OF THE MECHANICAL SUPERINTENDENT, MONCTON, N.B., 24th September, 1898.

SIR,—I beg to submit for your information the following statements prepared by the mechanical accountant:—

A.—Statement showing the number of locomotives and of the various classes of cars.

B.—Statement showing the locomotive and car mileage, and the number of passenger and freight cars hauled per mile run by engine.

C.—Abstract of locomotive returns.

D.—Statement of the cost of locomotive power for each month during the year.

E.—General statement of the expenses of the mechanical department during the year.

The following is a summary of the principal work done:—

### DRAWING OFFICE.

Designed new details for proposed ten wheel passenger engines; cab and details for rebuilding engines Nos. 188 and 189; cylinder arrangement and details for rebuilding engine 159; frame for rebuilding Mogul engines; new tender frame for 3,500 gals. tank; skeleton plans for Mogul and ten wheel engines; five additional details for "Cleveland" patent cylinder arrangement.

Designed new standard draught rigging for 60,000 lbs. freight cars; general plans and details for new 60,000 lbs. box and platform cars; new six wheel passenger truck and details; drawings for altering three first-class cars to dining and restaurant cars; 45 various detail drawings made for locomotive and car repairs.

Drawings made for new connecting shafting between boiler and smith's shop, Moncton; foundation plans for new machinery in Moncton shops.

Set of clearance plans made of I. C. Ry. turntables and running sheds; map made showing I. C. Ry. water tanks.

Specifications made for freight and passenger cars, wheels, axles, springs, etc.

Register of locomotive repairs and water service kept; specifications and special drawings supplied to stores for ordering on, and all materials so ordered checked and tested.

### MONCTON LOCOMOTIVE SHOPS.

Three passenger locomotives, Nos. 7, 39 and 161 were rebuilt with new extended wagon top boilers complete. All boiler mountings, sight feed lubricators and injectors new. New ends on front frames, back frames strengthened. New half saddle cylinders, pistons and crossheads complete. New driving axle-boxes, springs and gear. New eccentric sheaves and straps. New cabs, pilots, heavy C. I. footplates and C. I. running boards.

Two freight locomotives, Nos. 113 and 115, were rebuilt with new extended wagon top boilers complete. All boiler mountings, sight feed lubricators and injectors new. New ends on front frames. Back frames strengthened. New half saddle cylinders, balance valves, crossheads and guides complete. New driving axle boxes, springs and gear. New cabs, footplates and running boards.

Engine No. 135 was rebuilt with large second-hand repaired boiler. New tube and throat sheets. New smoke box and stack. Frames cut, lengthened, and strengthened. New cylinders, balance valves, pistons, crossheads and guides. New injector and sight feed lubricator.



Engine No. 59 was fitted with "Cleveland" patent cylinders, and had front frames cut and altered to suit. New smoke box and stack. New boiler tubes. New driving boxes, crossheads and guides. New driving tires. New cab and running boards. Back frames strengthened. New metallic packing. New engine truck complete.

Fifty-three locomotives received heavy repairs, and 69 had specific repairs.

The following new parts were supplied:—1 new inside firebox, 1 new tube sheet, 5 new cylinders, 13 new driving wheels, 68 new driving tires, 18 new driving axles, 7 new truck axles, 2 new engine trucks, 17 new main rods, 8 new side rods, 14 new cabs, 12 new pilcts, 7 new tender frames, 2 new tender tanks.

Fifty-five locomotive boilers were tested, 34 fireboxes were patched, 9,645 boiler tubes were pieced.

Ninety pair driving tires were turned, 193 truck wheels were re-tired.

Fifty-three locomotives and tenders were repainted and varnished.

Three locomotives were equipped with steam heaters.

#### MONCTON BRASS FOUNDRY.

Output:—61,573 lbs. brass castings, and 129,828 lbs. brass bearings.

#### MONCTON CAR SHOPS.

Three cold storage cars were built new complete, and equipped with "Westinghouse" air brake, "Moore" burglar proof doors, and automatic couplers.

One hundred and fifty-two freight cars were rebuilt.

The following received heavy repairs:—Governor Generals car "Victoria," 7 sleepers, 4 parlours, 4 second class sleepers, 38 first class cars, 26 second class cars, 20 postal cars, 18 baggage cars, 21 vans, 5 snow ploughs, 605 freight cars.

The following received light repairs:—5 sleepers, 1 parlour, 7 second class sleepers, 48 first class cars, 56 second class cars, 6 postal cars, 14 baggage cars, 29 vans, 6 snow ploughs, 2 flanger cars, 2,381 freight cars.

The following were repainted or stained and varnished:—1 sleeper, 2 parlours, 2 second class sleepers, 17 first class cars, 16 second class cars, 6 postal cars, 10 baggage cars, 13 vans.

The following were renovated and varnished:—6 sleepers, 3 parlours, 2 second class sleepers, 20 first class cars, 8 second class cars, 15 postal cars, 7 baggage cars.

Six hundred and fourteen freight cars, 7 vans, 12 snow ploughs, and three flanger cars were repainted.

Special work was done as follows:—

Sleeper "Miramichi" had all hoppers renewed with flushing water closets. New overhead water tanks. All lavatory fittings new throughout of white "Ajax" metal.

Sleeper "Saguenay" had windows fitted with new "Acme" blinds.

Five postal and smoking cars had seats re-upholstered with new pantasote.

Ninety-two freight car trucks were built.

Five hundred and seventy pair steel tired wheels were turned.

One hundred and fifty-seven new axles were turned.

Two thousand two hundred and forty old axles were trued up.

Two thousand one hundred and sixteen new wheels were pressed on axles.

Nine hundred and seventy-two second hand wheels were pressed on axles.

Two new locomotive cabs were built.

A large amount of work was done to freight and baggage trucks, chairs, safes, ticket cases, footboards, and other articles for out stations.

#### RIVIÈRE DU LOUP SHOPS.

Twenty-four locomotives received heavy repairs, and 13 had specific repairs, the following new parts being supplied:—1 new extension smoke box, 1 new driving



## Department of Railways and Canals.

wheel, 9 new driving tires, 17 new driving boxes, 10 new crank pins, 8 new smoke stacks, 14 new driving springs, 12 new engine truck springs, 2 new driving axles, 3 new side rods, 2 new rocker arms and 2 new boxes, 8 new pilots, 2 new piston rods, 4 new tender springs, 1 set tender brake gear, 3 new tender frames.

Twenty-one locomotive boilers were tested, 15 fireboxes were patched.

One locomotive was equipped with steam heater, 54 pair driving tires were turned, 22 engines and tenders were repainted and varnished.

### RICHMOND SHOPS.

Nine locomotives received heavy repairs, and 35 had specific repairs, the following new parts being supplied :—2 new driving axles, 7 new crank pins, 10 new driving boxes, 5 new driving springs, 3 new sets boiler tubes, 2 new pistons and 1 crosshead, 3 sets C. I. running boards, 2 new fluted side rods, 2 smoke stacks, 1 new cab and pilot, 1 new tender frame, 2 new tender trucks, 3 new pop valves, 1 new heavy C. I. foot-plate, 1 new dry pipe.

Nine locomotive boilers were tested, 10 fire-boxes, 3 boiler barrels, 2 smoke boxes, and 8 tender tanks were patched.

Eighteen pair driving tires were turned, and 9 engines and tenders were repainted and varnished.

### TURNTABLE REPAIRS.

*Hadlow.*—2 new truss rods, 4 new brackets, 2 new sleeve nuts, 1 new set centre rollers, 8 new centre casting bolts.

*Newcastle.*—Centre cap repaired.

*Mulgrave.*—65 new sleepers for circle rail, 24 new ties and new planking on top of table.

### WATER SERVICE.

*Alton.*—Built 17,000 gallon tank, with new stone foundation complete. New reservoir built. Boiler retubed.

*Amherst.*—Water crane rebuilt.

*Bathurst.*—Reservoir cleaned out and repaired.

*Belledune.*—New tank pipe, repaired boiler put in.

*Campbellton.*—Put in 162 feet 2½-inch galvanized pipe, 140 feet 4-inch terra cotta pipe, reservoir repaired.

*Canaan.*—Reservoir repaired. Steam-pump repaired.

*Charlo.*—Repaired boiler put in. Steam pump repaired.

*Carmel Ballast Pit.*—New hand pump.

*Causapscal.*—New 4-inch blow off cock.

*Cedar Hall.*—New tank pipe.

*Dalhousie.*—Repaired reservoir, water main and crane. Put in 12 feet 6-inch cast-iron pipe.

*Dalhousie Junction.*—New 12,000 gallon tank and trestle built complete. New stove and tank pipe.

*Drummondville.*—New tank pipe.

*Forestdale.*—New tank pipe.

*Hampton.*—New tank trestle tank hoops cut and re-riveted. New tank pipe. Tank painted.

*Hadlow.*—New tank pipe.

*Isle Verte.*—Station water pipes repaired.

*Londonderry.*—New tank pipe.

*Moncton.*—Water cranes repaired.

*McKinnon's Harbour.*—Windmill and pumps repaired.

*L'Islet.*—New piston rod in steam pump. New tubes in boiler.

*New Glasgow.*—New crane pipe. New 3-inch water gate.

*Oxford Junction.*—New tank trestle. Tank hoops cut and re-rivettcd. Tank and trestle painted.

*Piedmont.*—New tank pipe.

*Petitcodiac.*—New tank trestle. Tank hoops cut and re-rivettcd. Tank, trestle and coal shed painted. New steam gauge on boiler.

*Point Tupper.*—Windmill repaired with 18 new sails.

*Pugwash Junction.*—Connected boiler and steam pump for temporary use. New stove and pipe.

*Pictou.*—New 2-inch ball cock. Covering of well repaired.

*Sacré Cœur.*—Cleaned out reservoir. Repaired water crane and pipe. New sink put in station.

*Springhill Junction.*—Repaired boiler put in. New smoke and tank pipes. 29 feet 5-in. pipe laid.

*St. Leonard Junction.*—New tank pipe.

*St. Moïse.*—Steam pump repaired.

*St. Fabien.*—New blow off cock on boiler. New floor in pump house. Repaired boiler and steam pump put in.

*St. Valier.*—Tank house and steam pump repaired. Three new globe valves.

*Ste. Luce.*—Repaired windmill pump.

*St. Pierre.*—Well cleaned out. Steam pump repaired. New peet valve. Repaired boiler put in.

*Ste. Flavie.*—3,300 feet wood pipe put in. Reservoir cleaned out. Steam pump and tank pipe repaired. Sink put in station. Station pipes and w.c. repaired.

*St. Paschal.*—Water crane repaired.

*St. Charles.*—Steam pump repaired. Repaired boiler put in.

*Sydney.*—Fire hydrant repaired. Water put in baggage room for car washing.

*Rogersville.*—New tank trestle. Tank hoops cut and re-rivettcd. New smoke pipe. Tank and trestle painted.

*Rivière du Loup.*—New tank trestle. Tank hoops cut and re-rivettcd. New smoke pipe. Laid 33 feet 4-in. cast-iron pipe. Fire hydrant moved. 1 new 4-in. water gate. Shop and station, water closets and pipes repaired.

*River John.*—Repaired stone foundation of tank. New trestle. Tank hoops cut and re-rivettcd. Windmill and tower repaired and painted. New 32 feet ladder. New covering on well.

*River du Chêne.*—New tank pipe. Steam pump repaired.

*Trois Pistoles.*—New sink in restaurant. Repaired main water pipe and reservoir.

*Westcock.*—New smoke pipe for top of tank.

*West Bay Road.*—Repaired windmill and pump.

I have the honour to be, sir,

Your obedient servant,

G. R. JOUGHINS,  
*Mechanical Superintendent.*

D. POTTINGER, Esq.,  
General Manager Government Railways,  
Moncton, N.B.

A.—INTERCOLONIAL RAILWAY.

STATEMENT showing the number of Locomotives and of the Various Classes of Cars on the 1st of July, 1897, and on the 30th June, 1898.

The Various Classes of Cars.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Locomotives.	First Class Sleepers.		Second Class Sleepers.		Parlour.		First Class Passenger.		Second Class Passenger.		Postal and Smoking.		Express and Baggage.		Box and Refrigerator.		Platform, 10, 15 and 20 tons.		Hoppers, 6 tons.		Gondolas, 20 tons.		Coal Cars, 20 tons.		Cattle.		Vans.		Total.		Snow Ploughs.		Wing Ploughs.		Flangers.		Steam Ploughs.		Total.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

JOHN SUTTON,  
Mechanical Accountant.

MONCTON, 30th June, 1898.



B.—INTERCOLONIAL RAILWAY.

STATEMENT of Locomotive and Car Mileage, Year ended 30th June, 1898.

Months.	LOCOMOTIVE MILEAGE.			CAR MILEAGE.				Snow Ploughs.	Average Passenger	Average Freight.
	Passenger.	Freight.	Passenger.	Express, Postal and Baggage.		Freight.	Total.			
1897—July .....	129,643	195,114	583,946	285,437		2,574,714	3,444,097	82	6·70	13·19
August .....	126,698	175,611	576,679	268,212		2,216,409	3,061,300	555	6·67	12·62
September .....	120,499	195,453	580,988	276,874		2,615,464	3,473,326	...	7·11	13·38
October .....	112,766	227,383	497,550	264,684		3,182,678	3,944,912	260	6·75	13·99
November .....	104,023	217,983	428,457	240,776		3,116,605	3,785,838	850	6·42	14·29
December .....	109,310	229,302	445,057	252,971		3,135,627	3,833,655	3,417	6·38	13·67
1898 January .....	108,811	174,688	420,396	232,264		2,051,353	2,704,013	16,864	5·99	11·72
February .....	101,300	171,361	373,783	212,040		1,964,903	2,550,726	13,687	5·78	11·47
March .....	118,595	249,489	540,531	275,482		3,313,471	4,129,484	3,766	6·88	13·28
April .....	115,715	248,751	536,353	273,078		3,414,928	4,224,359	131	7·00	13·73
May .....	113,573	263,445	530,423	272,099		3,484,260	4,286,782	...	7·06	13·23
June .....	121,925	223,571	624,349	295,736		2,831,168	3,751,253	932	7·54	12·66
Total .....	1,382,858	2,572,151	6,138,512	3,149,653		33,901,580	43,189,745	40,544	6·72	13·18

JOHN SUTTON,  
*Mechanical Accountant.*

MONCTON, N.B., 30th June, 1898,

# Department of Railways and Canals.

C.—INTERCOLONIAL RAILWAY.  
ABSTRACT of Locomotive Returns for Year ending 30th June, 1898.

Months.	Hours in Steam.	Locomotive Mileage.	CONSUMPTION.				AVERAGE CONSUMPTION PER 100 MILES.				
			Tons of Coal.	Pints of Oil.	Pints of Valve Oil.	Pounds of Waste.	Miles run to 1 hour in Steam.	Pounds of Coal.	Pints of Oil.	Pints of Valve Oil.	Pounds of Waste.
1897—July.....	38,648	407,127	11,102	20,253	14,480	8,592	10·05	6,108	4·97	3·56	2·11
August.....	35,422	377,412	10,212	17,170	12,015	8,125	10·65	6,061	4·55	3·18	2·15
September ...	36,774	394,309	11,513	18,443	12,379	8,402	10·72	6,540	4·67	3·14	2·13
October.....	38,814	415,910	12,723	18,439	12,437	8,607	10·71	6,852	4·43	2·99	2·07
November....	36,783	395,928	12,381	18,264	11,280	8,621	10·76	6,979	4·61	2·85	2·17
December ....	37,905	412,708	13,217	19,003	11,716	9,407	10·88	7,176	4·60	2·84	2·28
1898—January .....	33,404	352,049	11,487	17,525	9,799	8,026	10·53	7,309	4·97	2·78	2·27
February.....	34,507	347,262	10,654	17,420	10,304	7,483	10·06	6,872	5·01	2·97	2·16
March.....	42,313	447,033	14,147	22,553	13,648	9,653	10·56	7,089	5·04	3·05	2·15
April .....	41,005	440,544	13,749	22,312	13,804	9,460	10·74	6,991	5·06	3·13	2·15
May .. ...	41,656	455,915	13,332	23,655	15,116	9,881	10·94	6,550	5·18	3·32	2·16
June.....	39,547	425,190	12,190	21,488	14,510	9,336	10·75	6,422	5·05	3·41	2·19
	456,778	4,871,387	146,707	236,525	151,488	105,593	10·66	6,746	4·85	3·11	2·17

MONCTON, N.B., 30th June, 1898.

JOHN SUTTON,  
*Mechanical Accountant.*

D.—INTERCOLONIAL RAILWAY.

STATEMENT of the cost of Locomotive Power for each month from 1st July, 1897, to 30th June, 1898.

Months.	Miles run by Engines.	Mechanical Supt.'s Salary; Clerks and Office Expenses.	Enginemn's Wages.	Fuel.	Oil, Tallow and Waste.	Repairs to Engines, Tenders and Tools.	Water.	Engine- houses and Turntables.	Total.	Average per 100 miles.						Total.
										Mechanical Supt.'s Wages.	Fuel.	Oil, Tallow and Waste.	Repairs.	Water.	Engine-houses and Turntab.	
1897—July...	407,127	1,027 14	23,060 31	28,417 57	2,706 99	24,614 33	940 13	558 56	81,325 03	25 5	66 6	98	66 6	05	23	14 19 97
	Aug...	997 69	22,034 02	26,771 99	2,387 37	27,600 18	2,402 65	1,360 78	83,554 68	25 5	86 7	09	62 7	31	64	36 22 14
	Sept...	971 86	22,396 62	30,621 86	2,568 85	23,112 29	3,557 46	1,812 12	85,041 06	25 5	68 7	77	65 5	86	90	46 21 57
	Oct...	955 14	23,420 12	33,812 64	2,644 62	22,580 93	2,897 23	1,501 06	87,811 74	23 5	63 8	13	64 5	43	70	36 21 12
	Nov...	1,020 25	22,290 64	32,619 34	2,525 92	20,152 91	3,742 23	1,520 94	83,872 23	26 5	63 8	24	64 5	09	95	37 21 18
Dec...	412,708	963 05	23,248 75	35,072 56	2,769 67	22,731 18	2,321 33	1,755 59	88,862 13	24 5	63 8	50	67 5	51	56	42 21 53
1898—Jan...	352,049	1,012 79	20,528 56	30,220 32	2,137 10	20,598 62	3,178 84	2,072 85	79,749 08	29 5	83 8	59	61 5	85	90	58 22 65
	Feb...	962 91	20,646 03	28,881 40	2,125 55	19,290 37	2,002 47	1,431 11	75,339 84	27 5	94 8	32	62 5	56	57	41 21 69
	March	1,053 62	24,838 53	37,803 75	2,557 44	18,020 69	1,801 26	1,467 12	87,542 41	24 5	56 8	46	57 4	03	40	32 19 58
	April	985 33	24,131 81	36,495 84	2,958 15	20,842 86	2,160 88	1,278 53	88,853 40	23 5	47 8	29	67 4	73	49	29 20 17
	May...	2,825 86	25,391 31	34,156 24	3,050 73	21,227 94	3,115 56	910 73	90,678 37	62 5	57 7	49	66 4	63	68	20 19 88
June...	425,190	1,040 91	24,130 82	33,394 37	2,991 89	35,296 09	1,251 76	895 00	99,000 84	24 5	67 7	85	73 8	36	30	21 23 30
Totals...	4,871,387	13,816 55	276,117 52	388,267 88	31,424 28	276,068 39	29,371 80	16,564 39	1,031,630 81	28 5	67 7	97	65 5	67	61	34 21 19

MONCTON, N.B., 30th June, 1898.

JOHN SUTTON,  
Mechanical Accountant.



Department of Railways and Canals.

E.—INTERCOLONIAL RAILWAY.

GENERAL STATEMENT of the Expenses of the Mechanical Department, year ended  
30th June, 1898.

The miles run by trains.....	3,955,009
"    "    engines.....	4,871,387
"    "    cars.....	43,189,745
"    "    snow ploughs. ....	40,544
Cost of locomotive power .....	\$    cts. 1,031,630 81
Cost of car repairs :	\$    cts.
Repairs to passenger cars .....	86,371 77
"    postal, express and baggage.....	22,276 39
"    freight cars and vans.....	232,118 81
"    snow ploughs and flangers.....	6,308 67
Oil and waste for packing .....	17,213 63
	\$ 364,289 27
The cost of locomotive power per 100 miles run by trains .....	\$    cts. 26 09
"                "                "    engines. ....	21 19
"                "                "    cars .....	2 39
The cost of repairs to cars and ploughs per 100 miles run by trains ....	\$    cts. 8 77
"                "                "    engines.....	7 12
"                "                "    cars and ploughs...	0 80
The cost of oil and waste for packing per 100 miles run by trains.....	\$    cts. 0 43
"                "                "    engines.....	0 35
"                "                "    cars and ploughs.....	0 04
The cost of repairs to cars per 100 miles run by them :	\$    cts.
Passenger.. ..	1 41
Postal, express and baggage.....	0 71
Freight cars and vans.....	0 68
Ploughs and flangers.....	15 56

JOHN SUTTON,  
*Mechanical Accountant.*

INTERCOLONIAL

RETURN of Accidents and Casualties which have occurred in Canada on the

Date.	Time of Day.	Number of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No. of Engine.
1897.						
July 3..	23 00	Special..	Freight .....	A. B. Vance.....	C. Saunders .....	66
" 5..	13 15	.....	Shunting.....	.....	A. Probert .....	42
" 7..	14 45	88	Accommodation....	W. Foster .....	A. Scott.....	57
" 9..	18 15	4	" .....	W. J. Campbell ..	W. J. Hunter. ....	56
" 13..	12 45	Special..	Freight .....	A. Calder.....	A. Probert .....	46
" 22..	15 25	25	Express .....	Jas. Millican.....	H. Tait.....	164
" 22..	16 41	124	D.A.R. Express ....	J. Matheson .....	Jas. Leitch.....	12
Aug. 3..	16 58	4	Accommodation....	Geo. Chesley.....	G. C. Palmer... ..	65
" 4..	8 00	.....	Shunting.....	.....	F. Gibson .....	110
" 7..	21 30	.....	" .....	.....	Geo. Milne.....	50
" 18..	21 10	26	Express .....	Jas. Millican.....	B. Cook... ..	130
" 21..	7 00	.....	Shunting.....	.....	W. McGarity.....	35
" 25..	5 30	.....	" .....	.....	J. McDowell.....	123
" 28..	22 20	1	Express (C.P.R.) ....	M. Bourgress .....	W. Smith .....	400
" 30..	9 00	23	Freight.....	T. M. Johnson.....	N. Copeland.. ....	27
Sept. 1..	21 50	17	Accommodation....	A. B. Vance.....	C. Saunders .....	66
" 8..	.....	.....	.....	.....	.....	.....
" 9..	11 50	.....	Shunting.....	.....	M. Tobin.....	191
" 17..	24 00	.....	" .....	.....	R. McDonald. ....	123
" 30..	5 35	8	Express .....	J. H. Sproull .....	F. Whitney.....	55
Oct. 3..	3 00	15	Freight .....	Jno. Hughes .....	C. McCarthy .....	144
" 4 .	10 35	45	Accommodation....	L. N. Letarte.....	O. Jolivert.....	203
" 23..	9 00	Special..	Freight .....	N. Hopper.....	A. Stevens.....	182
" 25..	13 40	" .....	" .....	F. Guinan .....	P. Peterson.....	78
" 25..	20 10	15	" .....	J. B. Pollock.....	D. Yould.....	34
Nov. 4..	13 15	35	Accommodation....	J. T. McGinn. ....	A. Donald .....	139
" 9..	23 15	11	" .....	Wm. Morgan .....	G. C. Palmer.. ....	50
" 10..	18 50	33	Express .....	Jno. Coffey .....	J. Navin .....	.....
" 15..	4 40	Special..	Freight .....	W. H. Williams.. ..	E. Rushton.....	36
" 19..	19 20	" .....	" .....	A. Desjardins .....	A. Connell.....	179
" 23..	6 00	.....	Shunting.....	.....	J. W. Boyd.....	23
" 23..	23 00	.....	" .....	.....	L. Starratt .....	182
" 30..	12 30	Special..	Freight .....	Jno. McDonald .....	Jas. Sproull .....	87
Dec. 1..	10 10	45	Accommodation....	Geo. Levesque .....	C. Sawyer .....	200
" 4..	17 40	24	Freight .....	T. W. Johnson.....	E. Kennedy .....	146

# Department of Railways and Canals.

## RAILWAY.

line of the Intercolonial Railway during the Year ended 30th June, 1898.

Place of Accident.	Name of Person injured.	Whether Passenger or Employee.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.
Stellarton . . .	Clarence Doyle .	Employee .	Fell between two cars in motion.	Fatal . . . . .	Accidental.
Pictou Landing.	John Johnson...	" . . .	While coupling cars. . . .	Hand injured...	Accidental.
4 miles east of Oxford.	A. Scott . . . .	" . . .	Run off of train. . . . .	Fatal . . . . .	
	A. B. Almour . .	" . . .	" . . . . .	Head and back injured.	
Dorchester Road	Sarah Burke....	Neither....	Crossing track, struck by train.	Fatal . . . . .	Accidental.
New Glasgow...	F. W. F. Ross..	" . . .	Attempting to get on train in motion.	" . . . . .	Accidental.
Hampton. . . . .	— Cady . . . . .	" . . .	Jumped off train in motion.	Slightly injured.	Accidental.
Bedford Bridge.	Ralph Melvin (Boy).	" . . .	Walking on track, struck by train.	Fatal . . . . .	
Moncton Yard..	Jno. Baker.....	Employee .	Struck by engine while working on track.	Head injured....	
" . . . . .	T. W. Corbett..	" . . .	While coupling tender to engine.	Slightly injured.	Accidental.
" . . . . .	Jno. M. Nixon..	" . . .	Struck by engine while shunting.	Fatal . . . . .	
Birch Cove.. . .	Susan Warner . .	Neither....	Hand car on which she was riding struck by train.	Slightly injured.	
St. John... . .	Jno. Magee.....	Employee..	Car on which he was working struck by another car which was being shunted.	" . . . . .	Accidental.
Truro . . . . .	T. Lester. . . .	" . . .	Fell while stepping on engine.	Considerably injured.	
St. John.....	Peter Harding..	Neither....	Lying on track, struck by train.	Feet cut off....	
Londonderry . .	W. A. Langille..	Employee .	While unloading freight...	Hand injured...	Accidental.
New Glasgow...	Robt. Doyle....	Neither....	Lying on track, struck by train.	Fatal . . . . .	
Dorchester Wh'f	Everitt Stenson.	" . . .	Moving cars by hand . . . .	Leg broken . . . .	
Deep Water Terminus, Halifax.	Geo. Malcolm...	Employee..	While coupling cars. . . .	Hand injured...	Accidental.
Truro . . . . .	C. Brunt . . . . .	" . . .	" . . . . .	" . . . . .	
Hampton . . . . .	— Keltie. . . . .	Passenger..	Jumped off train in motion.	Slightly injured.	
Near Athol....	Edwin Knight..	Neither....	Fell off train while stealing a ride.	Fatal . . . . .	Accidental.
St. Charles Junc.	A. Arcand.....	Employee..	Attempting to jump on train in motion.	Hand injured...	
Stewiacke . . . .	M. McDonald . .	" . . .	Fell while shunting . . . .	Arm injured....	
Stellarton . . . .	B. Ripley.....	" . . .	Slipped off pilot of engine..	Foot injured....	Accidental.
DeBert . . . . .	C. W. Lutes....	" . . .	While uncoupling engine from cars.	Hand injured...	
Kent Junction..	F. Frenette....	" . . .	While uncoupling cars. . . .	" . . . . .	
Moosehorn Bal- last Pit.	Daniel Brown...	Neither....	Fell off train while stealing a ride.	Fatal . . . . .	Accidental.
Sackville . . . .	Jno. Coffey....	Employee..	Slipped while stepping on train.	Leg injured....	
Brookville . . . .	Jas. A. White . .	" . . .	Fell off box car in motion..	Head and back injured.	
St. Moïse . . . . .	J. Deschamplains	" . . .	While coupling cars. . . .	Hand injured...	Accidental.
Truro . . . . .	John Brown....	" . . .	" . . . . .	" . . . . .	
" . . . . .	Murray Crockett	" . . .	" . . . . .	Finger injured..	
Acadia Coal Co's siding, Stellar- ton.	Jno. McDonald.	" . . .	While shunting . . . . .	Fatal . . . . .	Accidental.
St. Michel . . .	O. E. Talbot, M.P.	Neither....	Horse which he was driving ran away and carriage was struck by engine.	Head and arm injured.	
Wentworth . . . .	T. W. Johnson .	Employee..	Fell off flat car in motion..	Side and hip injured.	



## INTERCOLONIAL

## RETURN of Accidents and Casualties which have occurred in Canada on the

Date.	Time of Day.	No. of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No of Engine.
1897.						
Dec. 7..	18.48	65	Accommodation....	A. B. Vance.....	P. Fraser.....	185
" 8..						
" 10..	11.00	Special..	Freight.....	A. Desjardins.....	A. Connell.....	11
" 11..	18.10	" ..	" ..	F. Beaulieu.....	A. Boisvert.....	1
" 13..	8.00	" ..	" ..	C. C. Thomson.....	J. T. Smith.....	54
" 28..		5	D. A. R. Express..	Wm. Clarke .....	A. Palmetter .....	14
1898.						
Jan. 25..	14.50	38	Freight.....	Wm. Irving .....	Jas. Stratton .....	15
Feb. 3..	23.40		Shunting..		C. McHugh.....	118
" 3..	20.00		" ..		J. Walsh.....	191
" 6..	23.38	Special..	Freight.....	A. Gamache.....	{ J. McNutt.....	174
" 8..	2.25	34	Express .....	A. McLellan.....	{ W. Fraser.....	210
" 25..	13.15	88	Accommodation....	W. Foster .....	{ W. Bastin .....	156
" 27..	18.55	Special..	Snow-plough.....	H. Bégin.....	{ M. Normand.....	12
Mar. 18..	14.00				{ G. Lamothe .....	28
" 24..	10.45		Shunting..	E. S. Vye .....	{ L. Sheedy .....	126
April 6..	9.30		" ..			
" 7..	11.57	19	Express .....	N. Pushie.....	A. McCabe.....	71
" 16..	16.13	46	Accommodation....	L. Proulx.....	J. Moody.....	22
" 19..	18.40	13	" ..	H. D. Fraser.....	J. McEachren .....	161
" 24..	21.00		Shunting..		Jno. Murphy.....	195
" 30..	10.00	Special..	Freight..	P. Fretchet.....	J. Ross.....	131
May 2..	22.20	48	Accommodation .....	E. Lamire.....	M. O'Brien.....	127
May 3..	7.55	Special..	Freight..	J. Swetnam.....	L. Dutil.....	61
" 7..	12.00				O. Jollivert.....	205
" 11..	4.45		Shunting.....		A. Boisvert.....	3
" 19..	12.35	49	Freight.....	F. Laliberté.....	J. Gilfillan .....	32
" 19..	21.45	Special..	Freight..	J. A. Gillespie.....	W. F. Hicks.....	118
" 20..	15.45	17	Accommodation....	G. Margeson.....	A. Charrier .....	31
" 30	10.30		Shunting.....		L. Starratt.....	146
June 1..	16.30		" ..	Jno. McEachren .....	R. Kennedy.....	132
					Jno. McDowell .....	122
					Jno. Walsh .....	89

# Department of Railways and Canals.

## RAILWAY.

line of the Intercolonial Railway during the Year ended 30th June, 1897—*Continued.*

Place of Accident.	Name of Person injured.	Whether Passenger or Employee.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.
Westville.....	Wm. McGregor.	Neither....	Crossing track in team ....	Fatal.....	Accidental.
Coal Shed, Spring Hill.	— McQuarrie ..	" .....	Jammed " .....	Slightly injured.	No inquest.
Metapedia .....	John Paul.....	Employee..	and post.	Fatal.....	No inquest.
St. Alexandre...	A. Desjardins...	" .....	While coupling cars. ....	Finger injured..	
Sackville.....	Jos. Nadeau....	" .....	While coupling engine to car	" .....	
	C. C. Thomson .	" .....	Slipped in cattle guard while uncoupling cars.	Fatal .....	Accidental.
Near Rocky Lake	Miss Maud Foster.	Neither....	Walking on track.....	Slightly injured.	
North-west Bridge, Derby.	Jas. Hachey....	Employee ..	While walking over wing plough on train struck his head against bridge.	Head injured...	
Moncton.....	M. Sweeny.....	" .....	While coupling cars.....	Finger injured..	
Richmond ..	Jas. Jackson....	" .....	" .....	Shoulders injured.	
6½ miles w. of St. Moïse.	J. B. LeBel..	" .....	Run off of train .....	Head injured...	
4½ miles E. of Petit Roche.	V. LeBrun .....	" .....	" .....	Foot injured....	
Oxford Junction.	W. Bastin .....	" .....	" .....	Fatal .....	Accidental.
	Jas. Haines.....	" .....	" .....	Body injured...	
	C. D. Fillmore..	" .....	While coupling chain between passenger cars.	Collar bone broken.	
St. Apollinaire.	J. O. Dussault..	" .....	Run off of snow-plough....	Fatal .....	Accidental.
Campbellton....	C. Chouinard...	" .....	While cleaning switch lamp, fell off platform.	Two ribs dislocated.	
Newcastle .....	E. S. Vye .....	" .....	Car thrown from rail by ice.	Hip and back injured.	
St. John..	John Bell.....	" .....	Fell while stepping off engine in motion.	Face and shoulders injured.	
New Glasgow...	Louis Lapierre (Indian).	Neither..	Attempting to get on No. 19 train in motion.	Foot injured....	
St. Fabien bridge	J. J. Belanger..	" .....	Walking on track.....	Fatal .....	No inquest.
Truro .....	J. B. Williams..	Passenger ..	Fell off train in motion...	Head and body injured.	
Moncton .	L. Black.....	Employee ..	Struck by a piece of link which broke while coupling cars.	Hip injured....	
Chaudière Junct.	Joseph Côte ....	" .....	While coupling cars.....	Hand injured...	
King's Siding.	A. Boisvert.....	" .....	Accommodation train and light engine collided.	Fatal .....	Accident happened through error of engineman.
" ..	X. Letellier.....	" .....	" .....	" .....	
" ..	O. Jollivert.....	" .....	" .....	Slightly injured.	
Red Pine. .	Chas. Dion.....	" .....	" .....	" .....	
	E. Thompson...	" .....	Slipped and fell while trying to pass between two cars.	Foot injured....	
Truro Freight House.	Walter Miller...	" .....	While handling a heavy plate of iron.	" .....	
Moncton .....	F. Flannery ...	" .....	While coupling engine to car	Hand injured..	
Ste. Louise .....	A. Charrier.....	" .....	Attempting to get off engine in motion.	Fatal .....	No inquest.
Miller's Siding near Shubenacadie.	J. V. McDonald	" .....	While coupling cars.....	Arm injured....	
Stewiacke ..	W. A. Langille..	" .....	Fell off cars in motion....	Two ribs injured.	
Truro .....	J. Hollinsworth.	" .....	Attempting to get on car in motion.	Foot injured....	
Richmond ..	C. Hartlen.....	" .....	Standing on coupling link while shovelling ashes off car.	" .....	

INTERCOLONIAL

RETURN of Accidents and Casualties which have occurred in Canada on the

Date.	Time of Day.	Number of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No. of Engine.
1898.						
June 7 ..	9.50	Special..	Freight.....	L. Belanger.....	A. Matthews.....	179
" 7..	18.00					
" 8..	17.00	Special..	Freight.....	A. Desjardins.....	F. Matheson.....	179
" 9..	7.50	39	" .....	H. Barreau .....	J. Williamson .....	192
" 10..	11.55	34	Express .....	T. Corbett... ..	J. Morton.....	154
" 10..	14.40	20	" .....	N. Pushie.....	J. McEachren .....	161
" 10..	18.40	13	Accommodation. ...	F. A. Davison .....	Jno. Ross.....	131
" 10..	8.30	Special..	Freight.....	Jos. Dionne. ....	T. Berubé .....	
" 10..	13.50	" ..	" .....	J. A. Gillespie... ..	N. Copeland.....	209
" 14..	19.40	" ..	Working .....	Valere Roy .....	Geo. Cloutier.....	245
" 14..	21.00		Light engine.....		C. P. Atkinson .....	162
" 15..	6.00	40	Freight. ....	D. Brownell.....	E. S. White .....	110
" 27..	11.25	3	Accommodation....	Wm. Morgan .....	Geo. C. Palmer.....	64
" 30..	8.00					
" 30..	17.50	Special..		T. Guinan.....	P. Peterson.....	40

GENERAL MANAGER'S OFFICE,  
16th September, 1898.



Department of Railways and Canals.

RAILWAY.

line of the Intercolonial Railway during the Year ended 30th June, 1898—*Concluded.*

Place of Accident.	Name of Person injured.	Whether Passenger or Employee.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.
Little Metis ..	A. Descham- plains.	Employee ..	While uncoupling engine from car.	Hand injured...	
St. John. . . .	Geo. Kee. . . .	" ..	Fell off switch stand while lighting lamp.	Considerably in- jured.	
St. Octave ....	J. Deschamplains	" ..	While coupling cars. ....	Hand injured...	
Near Charlo ...	Mary LeBel (2 years).	Neither....	On track, struck by train..	Fatal .....	Accidental.
Nipisiquit bridge near Bathurst.	Arthur Walbeck	" .....	Walking on track, struck by train.	" .....	No inquest.
2½ miles W. of West River.	Isaac Butler....	" .....	" .....	" .....	Accidental.
Near Stewiacke.	Fred. Edgett....	" .....	" .....	" .....	"
St. Henri Bridge.	Mrs. Samson ...	" .....	" .....	" .....	"
Thomson....	J. D. McDonald.	Employee ..	While shunting.....	Ankle sprained..	
Ste. Croix .. .	Pat. Dawson...	" ..	Jumped off engine in motion	Slightly injured.	
Newcastle... ..	C. P. Atkinson .	" ..	Fell over end of station plat- form after stepping off engine.	Shoulder and side injured.	
Moncton .....	David Arbinq...	" ..	Walking on track.....	Considerably in- jured.	
St. John Yard..	Wm. Ingram (aged 9).	Neither...	Crossing track .....	Legs cut off....	
Belmont .....	F. D. Wilson...	Employee ..	Fell on station platform...	Arm broken ....	
Near Valley..	F. Guinan .....	" ..	Run off of train ...	Slightly injured.	
	C. Brown.....	" ..	" .....	" ..	
	R. McDonald...	" ..	" .....	" ..	
	H. Fenton ...	" ..	" .....	" ..	

## WINDSOR BRANCH RAILWAY.

OFFICE OF THE GENERAL MANAGER OF GOVERNMENT RAILWAYS,  
MONCTON, N.B., 19th September, 1898.

SIR,—I have the honour to submit the following statements showing the results of the working of the Windsor Branch Railway for the year ended 30th June, 1898:—

- No. 1. Revenue account.  
2. Maintenance of way and works.  
3. General balance.  
4. Statement of earnings.

I also send you the report of the chief engineer on the maintenance and condition of the permanent way and works.

This line, 32 miles in length, was operated during the year by the Dominion Atlantic Railway Company on the same terms as last year, the company being allowed to retain two-thirds of the gross earnings, the balance, one-third, being paid over to the Government, the latter maintaining the line.

The gross earnings accruing to the Government were..\$37,226 64  
The expenses of maintenance were..... 18,181 63

Net earnings.. ..... \$19,045 01

There was a decrease in earnings when compared with last year as follows:—

Earnings in 1896-97.. . . . \$40,603 23  
“ 1897-98 ..... 37,226 64

Decrease..... \$3,376 59

The earnings from passenger traffic increased \$1,786.65, and the earnings from freight traffic decreased \$5,163.23.

There was an increase in the cost of maintenance as follows:—

In 1897-98.....\$18,181 63  
In 1896-97. .... 10,821 04

Increase ..... \$ 7,360 59

This increase was chiefly in renewal of ties and repairs of fences and bridges. The report of the chief engineer gives details of the work.

The necessary repairs and renewals were made, and the permanent way and works are in good order.

I have the honour to be, sir,

Your obedient servant,

D. POTTINGER,  
General Manager Government Railways.

COLLINGWOOD SCHREIBER, Esq., C.M.G.,  
Deputy Minister and Chief Engineer, Railways and Canals,  
Ottawa, Ont.

# Department of Railways and Canals.

## INTERCOLONIAL RAILWAY OF CANADA,

### OFFICE OF THE CHIEF ENGINEER,

MONCTON, N.B., 8th September, 1898.

SIR,—I have the honour to submit my report of the maintenance of the Windsor Branch for the year ending 30th June, 1898.

#### BALLASTING.

During the year about 2,300 cubic yards of ballast were placed at different points along the branch

#### TIES.

During the year 21,834 ordinary hemlock ties, and 5 sets of switch ties have been renewed.

#### FENCING.

Five hundred and fifty-three rods of new barbed wire and woven wire fence were erected at points where no fence had been built and in place of the old post and board fences that existed at other parts of the line. Large repairs were made to existing fences.

#### SIDINGS.

During the year 1,150 feet of sidings were laid.

#### BUILDINGS AND PLATFORMS.

At Mt. Uniacke the platform was renewed.

At Newport necessary repairs were made to the station master's office and freight shed, and the station and freight platforms were also repaired.

At Ellershouse the station building was resingled, new sills placed under building and a new floor laid down.

At Windsor a portion of the roof of the freight shed was renewed with shingles, new sills and joists were placed under building, and necessary repairs were made to the doors.

#### BRIDGES, CULVERTS, &c.

The masonry of Sackville and Jordan's bridges was overhauled, repaired and pointed, where necessary. One pier of Sackville bridge was strapped with old iron rails and a retaining wall was built at Jordan's bridge. A new culvert was put under track at Lakelands of 24 inch iron pipe, with mason work at mouth of pipe.

#### GENERAL.

Seven sets of switch gear, five switch stands, and two semaphores complete, and six public road crossings were overhauled and painted.

A number of public and farm crossings were renewed with planking.

The stringers of five cattle guards were renewed with hard pine timber.

The track on the branch is in good order throughout its entire length.

I have the honour to be, sir,  
Your obedient servant,

WM. B. MACKENZIE,  
*Chief Engineer.*

D. POTTINGER, Esq.,  
General Manager Government Railways,  
Moncton, N.B.



## No. 1.—WINDSOR BRANCH RAILWAY.

## REVENUE ACCOUNT, Year ended 30th June, 1898.

Previous Year.	Expenditure.	Year ended 30th June, 1898.	Previous Year.	Earnings.	Year ended 30th June, 1898.
\$ cts.		\$ cts.	\$ cts.		\$ cts.
10,821 04	Maintenance way and works....	18,181 63	13,378 58	Passenger traffic..	15,165 23
29,782 19	Balance.....	19,045 01	26,072 81	Freight traffic.....	20,909 58
			1,151 84	Mails.....	1,151 83
40,603 23		37,226 64	40,603 23		37,226 64

E. &amp; O. E.

MONCTON, N. B., 30th June, 1898.

T. WILLIAMS,

Chief Accountant and Treasurer.

## No. 2.—WINDSOR BRANCH RAILWAY.

## MAINTENANCE WAY AND WORKS, Year ended 30th June, 1898.

Previous Year.		Year ended 30th June, 1898.
\$ cts.		\$ cts.
5,691 11	Repairs of track. ....	7,736 99
201 42	Rails and fastenings . . . . .	462 86
1,135 12	Ties.....	7,013 44
94 81	Bridges.....	366 65
19 34	Signals.....	67 15
887 38	Culverts, cattle guards, etc . . . . .	575 57
441 20	Wharf at Windsor.....	
383 57	Buildings and platforms.....	309 90
28 49	Hand cars and trollies. . . . .	11 80
350 07	Removing snow and ice . . . . .	243 20
136 07	Tools, and repairs of same.....	124 00
975 30	Fencing.....	263 34
430 86	Accountant's office and expenses.....	429 42
46 30	Miscellaneous (land damages, etc).....	577 31
10,821 04		18,181 63

E. &amp; O. E.

MONCTON, N. B., 30th June, 1898.

T. WILLIAMS,

Chief Accountant and Treasurer.

# Department of Railways and Canals.

## No. 3.—WINDSOR BRANCH RAILWAY.

DR.		GENERAL BALANCE, Year ended 30th June, 1898.		CR.	
1898.		\$ cts.	1898.		\$ cts.
June 30.	To Old rails.. .. .	9,190 14	June 30.	By Dominion account.. . . .	13,385 01
	Stores .. . . .	453 40			
	D. A. Railway .. . . .	3,741 47			
		13,385 01			13,385 01

E. & O. E.

T. WILLIAMS,  
Chief Accountant and Treasurer.

MONCTON, N. B., 30th June, 1898.

## No. 4.—WINDSOR BRANCH RAILWAY.

### MONTHLY STATEMENT of Receipts, one-third earnings.

Month.	Passenger Traffic.	Freight Traffic.	Mails.	Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1897—July .. . . .	1,492 38	1,619 08	96 91	3,208 37
August .. . . .	1,842 49	1,358 29	96 91	3,297 69
September .. . . .	2,572 74	2,033 58	96 90	4,703 22
October .. . . .	1,707 84	2,181 12	96 90	3,985 86
November .. . . .	1,037 53	2,135 26	96 90	3,269 69
December .. . . .	1,027 61	1,741 72	96 91	2,866 24
1898—January .. . . .	738 93	1,492 38	94 45	2,325 76
February .. . . .	672 70	1,234 92	94 45	2,002 07
March .. . . .	752 06	1,838 94	94 46	2,685 46
April .. . . .	949 80	1,896 48	95 68	2,941 96
May .. . . .	1,080 42	1,678 48	95 68	2,854 58
June .. . . .	1,290 73	1,699 33	95 68	3,085 74
Totals .. . . .	15,165 23	20,909 58	1,151 83	37,226 64

E. & O. E.

T. WILLIAMS,  
Chief Accountant and Treasurer.

MONCTON, N. B., 30th June, 1898.

## PRINCE EDWARD ISLAND RAILWAY.

OFFICE OF THE GENERAL MANAGER OF GOVERNMENT RAILWAYS,

MONCTON, N.B., 19th September, 1898.

SIR,—I have the honour to submit the following report on the working of the Prince Edward Island Railway, for the fiscal year ended 30th June, 1898.

I also inclose the report of the superintendent, including statements of the various accounts.

The mileage of railway in operation was the same as last year, 210 miles.

The capital of the railway was increased on account of new works to the extent of \$17,541.88, making the total cost on the 30th June, 1898, \$3,768,107.26.

The working expenses for the year were.....\$ 231,418 74

The gross earnings were..... 158,950 61

Deficiency .....\$ 72,468 13

The deficiency was \$14,578.64 less than last year.

In comparison with the previous year, there was a decrease in working expenses of \$9,071.18, and an increase in earnings of \$5,507.48.

There was an increase in earnings from passenger traffic of \$1,039.54, and an increase from freight traffic of \$5,972.94.

The number of passengers carried increased over the previous year 4,012, and the freight increased 5,388 tons.

There was an increase in the quantity carried of potatoes and roots, flour and meal, lumber of all kinds, coal, salt, live stock, butter and cheese, salted pork, and general merchandise; and a decrease in grain, starch, eggs, oysters, mackerel and fresh pork.

Twelve and a half miles of track were relaid with new steel rails weighing 50 pounds a yard, replacing iron rails weighing 40 pounds a yard.

Two wooden bridges were replaced with steel ones.

One first-class passenger car, one baggage car, six stock cars, fifteen platform cars, one flanger car, and one snow-plough were rebuilt in the railway workshops.

The necessary repairs and renewals were made, and the railway and rolling stock are in a state of efficiency.

In October and November, 1897, storms did great damage to the works of the railway at Marie and at Midgell, and at St. Peter's, and there was expended during the year in repairing this damage about \$4,000.

I have the honour to be, sir,

Your obedient servant,

D. POTTINGER,

*General Manager Government Railways.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,

Deputy Minister and Chief Engineer, Railways and Canals,  
Ottawa, Ont.



# Department of Railways and Canals.

## PRINCE EDWARD ISLAND RAILWAY.

SUPERINTENDENT'S OFFICE,  
CHARLOTTETOWN, P.E.I., 28th July, 1898.

SIR,—I have the honour to submit the following report on the working of the Prince Edward Island Railway, for the fiscal year ended 30th June, 1898.

I also inclose the following statements prepared by the Accountant and Auditor, and Mechanical Accountant and Storekeeper :—

- No. 1. Capital account.  
2. Revenue account.  
3. Locomotive power (abstract No. 1).  
4. Car expenses (abstract No. 2).  
5. Maintenance of ways and works (Abstract No. 3).  
6. Station expenses (abstract No. 4).  
7. General charges (abstract No. 5).  
8. General stores account.  
9. General balance.  
10. Comparative statement of averages.  
A. Monthly statement of the cost of locomotive power.  
B. Statement of performance and consumption of locomotives.  
C. Monthly statement of car mileage.  
D. Statement showing number of locomotives, cars, snow ploughs and flangers.  
E. Comparative statement of the expenses of the Mechanical Department.

The mileage of railway in operation was the same as the preceding year, 210 miles.

### CAPITAL ACCOUNT.

The total expenditure to 30th June, 1897, was.....\$3,750,565 38

The additions during the year were as follows:—

Survey of railway and carriage bridge across the Hillsboro' River, between Charlottetown and South Port, and survey of branch railway from South Port to Murray Harbour.....	6,614 82
Expenditure, between North Wiltshire and Colville, in grading, to reduce curves and shorten the line	9,996 31
Putting down siding at Mount Stewart to wharf at south side of the Hillsboro' River.....	930 75

Making the total cost on the 30th June, 1898. ....\$3,768,107 26

### SURVEY OF BRIDGE ACROSS THE HILLSBORO' RIVER AND BRANCH RAILWAY TO MURRAY HARBOUR.

This was for the purpose of determining the cost of building a railway and carriage bridge, combined, across the Hillsboro' River between Charlottetown and South Port, and also for building a branch railway to Murray Harbour, a distance of fifty miles. The survey was completed under the direction of Mr. W. B. Mackenzie, Chief Engineer of the Intercolonial Railway.

## GRADING BETWEEN NORTH WILTSHIRE AND COLVILLE.

This was for the purpose of reducing certain curves and shortening the line.

About 40,000 cubic yards of earth were placed in an embankment, one mile of woven wire fence built, two farm crossings constructed and part of the right of way paid for.

The work is to be continued into the next year for completion.

## SIDING AT MOUNT STEWART.

This was constructed for the purpose of touching a wharf at the south side of the Hillsboro' River, and owned by the Provincial Government, in order to encourage and facilitate traffic at this point.

The right of way was purchased and paid for, and 900 feet of grading and track laid.

## REVENUE ACCOUNT.

The earnings from passenger and freight show a very pleasing increase as compared with the last fiscal year.

Potatoes were in demand for local and foreign shipment, and many more were handled than during the previous year. Quite as large quantities of oats were sent to foreign markets as usual, a considerable portion of which was carried by rail to the principal shipping ports.

The passenger business appears to have been stimulated by an unmistakable result of better times, which seems fairly well grounded and likely to continue.

A pork-packing establishment under the management of Messrs. B. & M. Rattenbury was started on the 15th of November, 1897, at the east end of the city of Charlottetown, and about one-half mile from our depot.

This establishment, it is fully expected, will be a very great boon to the farmers of this province, and will, as a result, be beneficial in increasing the revenue of this railway.

The decrease in earnings from mails is accounted for in consequence of the mail train having been discontinued between Charlottetown and Georgetown much earlier last spring than usual.

The gross earnings and working expenses for the year compare as follows:—

Gross earnings.....	\$158,950 61
Working expenses.....	231,418 74
Deficit.....	<u>\$ 72,468 13</u>

The gross earnings compare with the previous year:—

In 1897-98.....	\$158,950 61
1896-97.....	153,443 13
Increase.....	<u>\$ 5,507 48</u>

The earnings from passenger traffic compare as follows:—

In 1897-98.....	\$ 63,734 61
1896-97.....	62,695 07
Increase.....	<u>\$ 1,039 54</u>

## Department of Railways and Canals.

The earnings from freight traffic compare as follows :—

In 1897-98 .....	\$ 75,845 60
1896-97 .....	69,872 66
Increase .....	<u>\$ 5,972 94</u>

The earnings from mails and sundries compare as follows :—

In 1897-98 .....	\$19,370 40
1896-97 .....	20,875 40
Decrease .....	<u>\$ 1,505 00</u>

The number of passengers carried compares as follows :—

In 1897-98 .....	126,510
1896-97 .....	121,498
Increase .....	<u>4,012</u>

The weight of freight carried compares as follows :—

In 1897-98 .....	Tons. 57,539
1896-97 .....	52,151
Increase ... ..	<u>5,388</u>

### WORKING EXPENSES.

The working expenses compare as follows with the previous year :—

In 1897-98 .....	\$231,418 74
1896-97 .....	240,489 90
Decrease .....	<u>\$ 9,069 16</u>

The averages compare with the year as follows :—

Per mile run by engines :—

In 1897-98 .....	Cents. 70·68
1896-97 .....	70·82

Per mile run by trains :—

In 1897-98 .....	91·51
1896-97 .....	94·67

Per mile of railway :—

In 1897-98 .....	\$ 1,101 99
1896-97 .....	<u>1,145 19</u>

### TRACK.

One thousand tons of steel rails with fastenings were laid between Peakes and Georgetown during the year, to replace  $12\frac{1}{2}$  miles of old iron rails.

There are now  $151\frac{1}{2}$  miles of track laid with 50 lbs. to the yard steel rails, and  $58\frac{1}{2}$  miles old iron rails of 40 lbs. to the yard, which require to be replaced with steel.

During the year about 4,500 old iron rails were replaced in the track, selected from those formerly taken out.

The foundation of track scales at Georgetown was rebuilt with pitch pine.



## TIES.

There were renewed during the year 55,000 ordinary ties, 25 sets switch ties and 19 head-blocks and frames, besides 1,925 culled ties used in yards and sidings.

## BALLASTING.

During the year 14,522 cubic yards of ballast were distributed where required.

## FENCING.

Eleven miles of old fence were replaced by 10,560 feet of barbed wire and 47,520 feet of woven wire. 9,240 feet of snow fence were rebuilt, general repairs were made to both snow and ordinary fence all along the line and a large quantity of material was used.

One hundred farmers' gates were replaced by woven wire gates.

## SIDINGS.

At Tignish a siding 360 feet in length was put in at the coal shed, also a siding of 720 feet put in at Messrs. J. H. Myrick's warehouse.

At O'Leary a siding was extended 103 feet.

At Traveller's Rest a siding of 210 feet was put in.

At Charlottetown a siding 450 feet long was put in at the pork packing establishment of Messrs. B. & M. Rattenbury.

At 48 Road the siding was extended 150 feet.

## BRIDGES, CULVERTS, ETC.

At Marie the old wooden bridge was replaced by a 54 foot steel girder, resting on stone abutments.

At Midgell the old wooden bridge was replaced by a 54 foot steel girder, resting on stone abutments. Both of the above bridges were furnished with new Princess pine ties and supplied with guard rails, and were given one coat of iron oxide paint.

An overhead bridge, 30 foot span and 19 feet high, leading to the wharf at Souris, was rebuilt of hemlock timber for abutments and spruce stringers, replacing the old structure, which was completely rotted out.

The girder bridge at Naufrage was painted.

The bridges at Barbara Weit and Dunk River had new Princess pine ties laid and guard rails renewed.

The stringers of bridge at Wellington were partly renewed.

Three bents, containing 15 spruce piles, 45 feet long were put under Morell bridge, to support the present structure. In preparation for a new steel pony truss for this bridge, a large amount of scaffolding has been erected and twenty creosote piles have been driven.

Pine Brook Bridge had one new stone abutment built and new stringers, and Princess pine ties were supplied.

All other bridges have had necessary repairs.

Three cast iron pipe culverts were put in, to replace blind drains which were defective.

Nineteen other timber culverts were rebuilt.

Twenty-five cattle guards were rebuilt.

Four Haggas tanks were renewed.

## Department of Railways and Canals.

### BUILDINGS, PLATFORMS, ETC.

At Tignish a box drain 500 feet long, 12 in. x 12 in. built of 3-in. hemlock plank and sunk 4 feet in the earth, was constructed, to carry off the water from the turn-table.

A baggage room was built adjoining the station, a building for coaling engines was constructed in connection with the coal shed, and the roof of the freight shed was partly resingled.

At O'Leary the agent's dwelling over station was whitewashed, papered, painted and the flue rebuilt; the well, also, was rebuilt with stone and mortar.

The warehouse at Cape Traverse, 150 feet long and 30 feet wide, was taken apart, removed to Charlottetown and re-erected for storing lumber in.

The engine house at Charlottetown had 13,000 feet 3-inch hemlock plank flooring put down, as renewals, and five engine pits were rebuilt.

Mount Stewart station was supplied with two new doors.

At Summerside the roof of the station was partly resingled.

The roof of the engine house at Georgetown was partly resingled.

The roof of station house at Cardigan was resingled.

The following flag stations and platforms were rebuilt:—

Suffolk.

Rollo Bay.

Winsloe.

Loyalist, and Five Houses.

A new floor was laid in St. Peter's station waiting-room, and the same also in the waiting-room and ticket office of Bear River station.

The roof of engine house and freight shed at Souris was resingled.

Platforms at Tracadie, Albany and Emerald were rebuilt.

The paymaster's office at Charlottetown had new sills, new floor, walls and ceiling replastered, also woodwork renewed and painted.

The coal shed at Georgetown was partly rebuilt.

The pattern loft of the carpenter shop at Charlottetown was enlarged to twice its former capacity and sheathed.

New stock pens were erected at Souris, Bradalbane and Cape Traverse, the one at O'Leary was enlarged, and those at Mount Stewart, Hunter River and Cardigan were repaired.

The following buildings were painted two coats:—

Charlottetown station.

Georgetown “

Souris “

Cardigan “

Suffolk Flag “

Rollo Bay “

Winsloe “

Loyalist “

Five Houses Flag Station.

Freight shed (Georgetown wharf).

### WHARFS AND BREASTWORKS.

In repairing Alberton wharf 25 tons of hemlock timber were used.

In repairing Georgetown wharf 40 tons of hemlock, 5 carloads brush, and 500 cubic yards of stone and earth were used.

In repairing Souris wharf 20 tons of hemlock timber, 4 cars of brush, and 100 tons of stone were used.

In repairing Summerside wharf 110 tons of timber, 5 cars of brush, 150 tons of stone, and 500 cubic yards of earth were used, together with 25 piles about 40 feet each in length, driven as stays and mooring posts; there were also 538 feet of the breastwork repaired with timber, stone and brush.



In repairing Charlottetown wharf 25 tons of timber, 100 cubic yards of stone, and 4 cars of brush were used; besides repairing the breastwork, 23 tons of timber and 300 cubic yards of earth were used.

On account of high winds and tides on 17th October and 10th November last, washouts occurred at Marie and Midgell bridges, carrying away large portions of the approaches and road-bed, and at St. Peter's about 1,000 feet of the breastwork and road-bed were seriously damaged, which necessitated the following work and material in rebuilding:—

At Marie bridge the approach to the west side had brushwork 8 feet high and 360 feet in length secured with stone and earth.

On the east side of the same bridge there were 100 feet of cribwork built of hemlock timber, and filled in with stone and brush to a height of 6 feet.

At Midgell bridge the approach at the east side had cribwork supplied 170 feet in length and 6 feet high, built of hemlock timber, and filled in with brush and stone.

At St. Peter's 800 feet of the breastwork has been rebuilt with hemlock timber, filled in with brush, stone and earth to a height of 6 feet.

The work at this breastwork is still going on, and will be continued until completed in the current year.

#### ROLLING STOCK.

Following is a summary of the principal work done in the shops of the Mechanical Department:—

##### *Locomotive Repairs.*

Two locomotives, Nos. 18 and 4 were rebuilt. They received new fire boxes, new driving wheels, new driving axles, new driving boxes, new eccentrics and straps, new pistons and piston rods, new crank pins, new brasses, new cylinder covers, new vacuum ejectors, new metallic packing in piston and valve rods, frames rebolted and tenders thoroughly repaired.

Seven locomotives received heavy repairs, one of which was considerably damaged and was largely rebuilt.

Eight other locomotives received specific repairs.

The following new parts being supplied and work performed: 10 boilers were tested, 4 boilers were patched, 600 tubes were pieced, 321 car wheels were bored and pressed on axles, 34 new car axles and 3 driving axles were turned, 4 cylinders were bored out, 8 new tires shrunk on, 1 new front tube sheet was put in, 4 new ash pans, 4 new smoke stacks, 6 new straps for side rods, 1 new side rod, 6 pop valves, 3 whistles, 12,450 bolts were forged and threaded, 3,423 lbs. of nuts were tapped, 1,400 stay bolts turned and threaded.

For the road department 12 set of switch gear were made, 2 new frogs and 12 frogs repaired, besides a quantity of tools and other small parts were supplied. Four track scales and 3 station scales were repaired, and 6 new smoke stacks for engine-houses were rebuilt.

##### *Brass Foundry.*

Output—7,784 lbs. brass castings and 543 brass bearings.

##### *Car Shop.*

One first class car, one baggage car, six stock cars, 15 platform cars, one flanger car and one snow-plough were rebuilt during the year.

Two first class cars received thorough repairs, one of which was supplied with new head lining, seats repaired and plush dyed, one second class and baggage combined was converted into postal and baggage combined.



## Department of Railways and Canals.

Three second class and one baggage car received general repairs.

Forty box cars received thorough repairs, fifteen of which had new roofs put on and standard draw bars were supplied three of them.

Twelve box cars and 15 platform cars received general repairs.

One snow-plough and one flanger car and one van received general repairs.

The following work was done for the locomotive department:—

Seven cabs received general repairs.

Six tenders were repaired, two of which had new end sills, buffers and finish supplied.

One cab, two pilots, six tool boxes, two tender trucks, six running boards and four buffer beams were rebuilt.

For the road and traffic departments the following work was done:—

Two hand cars and three trollies were rebuilt, four freight and two baggage trucks were built, five coal wagons were built, and two received repairs.

Four Haggas tanks were built.

Ten loading platforms, eight cattle stages and 125 farmers' gates were built.

Fifteen switch frames and two new steel bridges were fitted.

One ash ticket case with roller front and ten boxes were made.

### *Paint Shop.*

Three first class, three second and four baggage cars were painted and varnished.

Three first class and one baggage car were cleaned and varnished.

One van was painted and varnished.

Six locomotives and tenders were painted and varnished.

Fifty-three box cars, eighteen platform cars and eight hand cars were painted.

Forty switch frames, nine buildings, two semaphores and twelve outside sashes were painted, and 200 panes of glass were put in.

### STORES.

The value of stores purchased was..... ..	\$79,843 16
The value of stores used was. .... ..	69,502 11
The value of old material sold was..... ..	10,255 83

The value of stores on hand at the end of the year was:—

Ordinary stores..... ..	\$37,081 41
Fuel..... ..	1,820 36
Iron and steel rails and fastenings..... ..	2,804 70
Old material for sale. .... ..	49,388 28
Total .....	<u>\$91,094 75</u>

### GENERAL.

The rolling stock, road-bed, and buildings have been maintained in a state of efficiency.

I inclose a return also of minor casualties which occurred during the year.

I have the honour to be, sir,

Your obedient servant,

G. A. SHARP,  
*Superintendent.*

D. POTTINGER, Esq.,  
General Manager Government Railways,  
Moncton, N.B.

No. 1.—PRINCE EDWARD ISLAND RAILWAY.

DR.		CAPITAL ACCOUNT.		CR.	
1897.		\$ cts.	\$ cts.	1897.	\$ cts.
June 30.	To cost of road and equip- ment to date.....		3,750,565 38	June 30.	By Dominion of Canada 3,750,565 38
1898.				1898.	
June 30.	To expenditure for cur- rent year:—			June 30.	" " 17,541 88
	Removing curves, main line.....	9,996 31			
	Survey of bridge and ex- tension towards Murray Harbour .....	6,614 82			
	Increased accommoda- tion, Mt. Stewart.....	930 75			
			17,541 88		
			3,768,107 26		3,768,107 26

CHARLOTTETOWN, P.E.I., 30th June, 1898.

W. T. HUGGAN,  
Accountant and Auditor.

No. 2.—PRINCE EDWARD ISLAND RAILWAY.

DR.			REVENUE ACCOUNT for year ended 30th June, 1898.			CR.
Previous Year.	Expenditure.	Year ended 30th June, 1898.	Previous Year.	Receipts.	Year ended 30th June, 1898.	
\$ cts.		\$ cts.	\$ cts.		\$ cts.	
55,991 60	Locomotive power, Ab- stract No. 1.....	56,520 66	62,695 07	Passenger traffic. . . . .	63,734 61	
41,967 07	Car expenses, Abstract No. 2.....	38,827 84	69,872 66	Freight traffic . . . . .	75,845 60	
102,344 47	Maintenance of way and works, Abstract No. 3..	94,333 51	20,875 40	Mails and sundries.....	19,370 40	
28,858 47	Station expenses, Abstract No. 4.....	29,076 53	153,443 13	..... Total receipts.. . . .	158,950 61	
11,328 29	General charges, Abstract No. 5.....	12,660 20	87,046 77	..... Balance . . . . .	72,468 13	
240,489 90	Totals .....	231,418 74	240,489 90	..... Totals.....	231,418 74	

CHARLOTTETOWN, P.E.I., 30th June, 1898.

W. T. HUGGAN,  
Accountant and Auditor.

# Department of Railways and Canals.

## No. 3.—PRINCE EDWARD ISLAND RAILWAY.

### LOCOMOTIVE POWER—(Abstract No. 1).

Previous Year.	Details.	Year ended 30th June, 1898.
\$ cts.		\$ cts.
770 23	Mechanical superintendent's salary, clerks, office and travelling expenses...	619 66
18,313 54	Wages of drivers, firemen and cleaners...	18,164 92
13,605 62	Fuel...	14,514 29
2,220 88	Oil, tallow, waste and small stores...	2,055 16
19,134 27	Repairs to engines, tenders and engine tools ....	19,033 40
508 57	Water, including pump and tank repairs.....	556 41
1,438 49	Miscellaneous. ....	1,576 82
55,991 60	Totals.....	56,520 66

W. T. HUGGAN,

CHARLOTTETOWN, P.E.I., 30th June, 1898.

*Accountant and Auditor.*

## No. 4.—PRINCE EDWARD ISLAND RAILWAY.

### CAR EXPENSES—(Abstract No. 2).

Previous Year.	Details.	Year ended 30th June, 1898.
\$ cts.		\$ cts.
8,988 98	Repairs to passenger cars.....	7,885 15
1,434 46	" postal and baggage cars .....	2,109 06
10,701 01	" freight cars and vans. ....	7,838 66
1,303 43	" snow-ploughs and flangers.....	1,059 60
15,594 87	Wages of conductors, train baggage-masters and brakemen.....	15,700 30
642 74	Oil and waste for packing.....	798 25
2,428 10	Small stores and fuel.....	2,545 33
873 48	Miscellaneous.....	891 49
41,967 07	Totals.....	38,827 84

W. T. HUGGAN,

CHARLOTTETOWN, P.E.I., 30th June, 1898.

*Accountant and Auditor.*



No. 5.—PRINCE EDWARD ISLAND RAILWAY.  
MAINTENANCE OF WAY AND WORKS—(Abstract No. 3).

Previous Year.	Details.	Year ended 30th June, 1898.
\$ cts.		\$ cts.
298 22	Engineer's salary, clerks, office and travelling expenses.....	295 64
37,794 51	Wages in repairing roadway, fences and semaphores.....	39,337 62
19,262 81	Rails, chairs and spikes.....	16,781 99
21,330 73	Ties.....	17,394 37
8,035 04	Timber and lumber for repairs to bridges, cattle-guards, fences.....	9,461 29
1,587 90	Repairs to wharfs.....	2,313 19
16,793 58	" buildings and platforms.....	5,479 72
1,011 49	" tools.....	1,047 97
2,230 19	Clearing ice and snow.....	2,221 72
102,344 47	Totals.....	94,333 51

W. T. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1898.

No. 6.—PRINCE EDWARD ISLAND RAILWAY.  
STATION EXPENSES—(Abstract No. 4).

Previous Year.	Details.	Year ended 30th June, 1898.
\$ cts.		\$ cts.
22,180 51	Salaries and wages of station masters, agents, clerks, telegraph operators, station baggage-masters, yard-masters, switchmen, watchmen and labourers.....	22,458 30
6,677 96	Fuel, oil, light, stationery and other incidental expenses.....	6,618 23
28,858 47	Totals.....	29,076 53

W. T. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1898.

# Department of Railways and Canals.

## No. 7.—PRINCE EDWARD ISLAND RAILWAY.

### GENERAL CHARGES—(Abstract No. 5).

Previous Year.	Details.	Year ended 30th June, 1898.
\$ cts.		\$ cts.
4,271 66	Superintendent's and train despatchers' salaries, clerks, office and travelling expenses...	4,439 93
4,765 95	Accountant and auditor's, paymaster's and cashier's salaries, clerks', office and travelling expenses	4,814 61
798 59	Advertising	697 85
523 37	Damages to men, animals and goods	2,202 01
382 67	Telegraph expenses (not including pay to operators).	323 69
586 05	Miscellaneous.	182 11
11,328 29	Totals	12,660 20

W. T. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1898.

## No. 8.—PRINCE EDWARD ISLAND RAILWAY.

### STATEMENT of General Stores Account, Year ended 30th June, 1898.

1897.	DR.	\$ cts.	\$ cts.
June 30..	To Balance brought forward.....		97,160 79
1898.			
June 30..	Purchases during the year, including rails.....	79,843 16	
	Charges from other departments.....	17,134 07	
	Pay-rolls.....	1,230 00	
			98,207 23
1898.	CR.		195,368 02
June 30..	By Issues during the year. ....		104,273 27
	Balance { Ordinary stores.....\$37,081 41 Fuel.....1,820 36 Rails and fastenings on hand.....48,647 58 Old material serviceable.....3,545 40 }		91,094 75

W. T. HUGGAN,  
*Accountant and Auditor*

CHARLOTTETOWN, P.E.I., 30th June, 1898.

No. 9.—PRINCE EDWARD ISLAND RAILWAY.

DR.	GENERAL BALANCE.		CR.		
	\$	cts.	\$	cts.	
General stores .. .. .	91,094	75	Dominion Account ... .. .	105,117	46
Cash.....	1,659	46	Accident Insurance.....	1,954	42
Stations.....	954	27			
Post Office Department.....	3,600	30			
Militia Department .....	110	55			
Anglo-American Telegraph Co .....	46	43			
Judge Weatherbie.....	30	00			
Sidney Grey .. .. .	25	00			
Railway extension, Charlottetown.....	812	83			
Intercolonial Railway .....	7,962	09			
B. & M. Rattenbury.....	76	20			
Galena Oil Works, Ltd .....	700	00			
Total.....	107,071	88	Total....	107,071	88

W. T. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1898.



# Department of Railways and Canals.

## No. 10.—PRINCE EDWARD ISLAND RAILWAY.

COMPARATIVE STATEMENT OF AVERAGES, for years ended 30th June, 1898 and 1897.

Details.	1898.	1897.
Mileage of railway open.....	210	210
Engine mileage .....	327,424	339,551
Train mileage.....	252,894	254,029
Car mileage.....	1,340,114	1,319,903
Receipts per engine mile.....Cents.	48 54	45 19
"    mile of railway.....Dollars.	756 91	730 68
Percentage of passenger earnings to gross receipts.....	40 10	40 86
"    freight        "        ".....	47 71	45 54
"    other        "        ".....	12 19	13 60
Expenses per engine mile :—		
Drivers, firemen, and cleaners' wages.....	5 55	5 39
Fuel .....	4 44	4 01
Oil, tallow, waste and small stores.....	63	66
Repairs to engines.....	5 81	5 63
Water and tank repairs.....	16	15
Miscellaneous.....	48	42
	17 07	16 26
Mechanical superintendent's salary, office and travelling expenses.....	19	23
Total .....	17 26	16 49
Locomotive power, per engine mile...	17 26	16 49
Car expenses        ".....	11 85	12 36
Maintenance of way and works        ".....	28 81	30 14
Station expenses        ".....	8 88	8 50
General charges        ".....	3 88	3 33
Total per engine mile .....	70 68	70 82
Locomotive power, per train mile...	22 35	22 04
Car expenses        ".....	15 35	16 52
Maintenance of way and works        ".....	37 30	40 29
Station expenses        ".....	11 50	11 36
General charges        ".....	5 01	4 46
Total per train mile.....Cents.	91 51	94 67
Working expenses per mile of railway.....Dollars.	1,101 99	1,145 19

W. T. HUGGAN,  
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1898.

A.—PRINCE EDWARD

MECHANICAL

STATEMENT of Cost of Locomotive Power

Months.	Miles run by Engines less Ballasting.	Cost of				
		Enginemens's Wages.	Fuel.	Oil, Tallow, Waste, &c.	Repairs.	Water, including Tank and Pump Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1897—July.....	32,581	1,659 22	1,518 80	227 42	1,467 20	23 69
August.....	28,316	1,450 93	1,227 17	181 07	1,356 58	.....
September.....	29,448	1,600 81	1,423 97	178 28	1,458 35	74 93
October.....	30,749	1,449 37	1,370 39	173 62	1,427 05	65 45
November.....	32,118	1,472 36	1,680 98	198 64	1,421 80	8 98
December.....	30,724	1,453 54	1,548 46	203 97	1,843 39	162 60
1898—January.....	22,791	1,580 21	1,538 15	196 26	2,136 40	21 01
February.....	23,738	1,545 36	1,285 66	167 78	1,876 04	2 50
March.....	25,396	1,678 81	1,197 64	202 45	1,938 34	7 94
April.....	23,481	1,445 82	707 02	137 64	2,135 20	0 50
May.....	20,749	1,387 43	555 76	172 53	1,083 31	161 22
June.....	27,333	1,441 06	460 29	15 50	889 74	27 59
Totals.....	327,424	18,164 92	14,514 29	2,055 16	19,033 40	556 41

Department of Railways and Canals.

ISLAND RAILWAY.

DEPARTMENT.

for the Year ended 30th June, 1898.

		Average per Mile run.						
Miscellaneous, including Expenses of Office and Engine Houses.	Total.	Engine- men.	Fuel.	Oil, Tallow, &c.	Repairs.	Water.	Miscella- neous.	Total.
\$ cts.	\$ cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
153 97	5,050 30	5·12	4·66	0·69	4·50	0·07	0·47	15·51
119 06	4,334 81	5·12	4·33	0·64	4·79	.....	0·42	15·30
92 76	4,829 10	5·44	4·84	0·60	4·95	0·25	0·31	16·39
135 91	4,621 79	4·72	4·46	0·56	4·64	0·21	0·44	15·03
254 53	5,037 29	4·58	5·23	0·61	4·42	0·02	0·79	15·65
254 17	5,466 13	4·73	5·04	0·66	6·00	0·53	0·83	17·79
307 94	5,779 97	6·93	6·75	0·86	9·37	0·10	1·35	25·36
259 72	5,137 06	6·51	5·42	0·71	7·90	0·01	1·09	21·64
187 33	5,212 51	6·61	4·72	0·80	7·63	0·03	0·73	20·52
143 11	4,569 29	6·11	3·01	0·59	9·09	.....	0·61	19·41
139 53	3,499 78	6·68	2·68	0·83	5·22	0·77	0·68	16·86
148 45	2,982 63	5·27	1·68	0·06	3·26	0·10	0·54	10·91
2,196 48	56,520 66	5·55	4·44	0·63	5·82	0·14	0·68	17·26

S. F. HODGSON,  
*Mechanical Accountant.*



B.—PRINCE EDWARD

MECHANICAL

STATEMENT of the Performance and Consumption

Months.	Hours in Steam.	Train Mileage.				Mileage by Engines.			
		Passenger.	Freight and Mixed.	Ballasting.	Piloting.	With Train.	Light.	Shunting.	Total.
1897—July.....	3,895	13,074	12,164	2,050	308	27,596	20	7,171	34,787
August .. . . .	3,572	11,016	11,230	1,973	95	24,314	104	6,031	30,449
September....	3,715	11,664	10,682	3,302	519	26,167	142	6,776	33,085
October.....	3,883	12,039	12,058	2,852	70	27,019	114	6,843	33,976
November.....	4,188	10,638	14,039	2,542	128	27,347	382	7,441	35,170
December....	3,682	10,145	13,495	272	186	24,098	238	6,675	31,011
1898—January .....	3,142	3,771	12,140	.....	1,068	16,979	315	5,497	22,791
February .....	3,279	3,802	12,245	.....	2,063	18,110	86	5,542	23,738
March. ....	3,460	4,022	14,811	.....	1,434	20,267	176	4,953	25,396
April .. . . .	3,044	3,077	14,681	.....	44	17,802	69	5,610	23,481
May.....	2,841	1,356	13,467	729	242	15,794	50	5,684	21,528
June .....	3,805	6,814	14,280	1,230	27	22,351	115	6,537	29,003
Totals.....	42,506	91,418	155,292	14,950	6,184	267,844	1,811	74,760	344,415

Department of Railways and Canals.

ISLAND RAILWAY.

DEPARTMENT.

of Locomotives for the Year ended 30th June, 1898.

Total Mileage.		Average of Cars per Mile run with Train.	Average Mileage.		Consumption.			Consumption per 100 miles run by Engines.		
Cars.	Snow Ploughs.		Miles to 1 hour in Steam.	Of Cars to one of Engines.	Bushels of Coal.	Pints of Oil.	Pounds of Waste.	Bushels of Coal.	Pints of Oil.	Pounds of Waste.
136,205	.....	4·99	8·93	3·62	13,519	3,457	651	38·86	9·93	1·87
126,213	.....	5·21	8·52	4·14	11,943	2,735	587	39·22	8·98	1·92
138,515	.....	5·40	8·90	4·18	13,339	2,137	549	40·32	6·45	1·65
140,610	.....	5·21	8·74	4·13	13,010	2,071	552	38·29	6·09	1·62
158,831	.....	5·85	8·39	4·51	16,553	2,552	628	47·06	7·25	1·78
120,635	.....	5·04	8·42	3·89	14,565	2,378	612	46·96	7·66	1·97
84,125	2,106	5·28	7·25	3·69	12,803	1,964	439	56·17	8·70	1·92
80,308	.....	5·00	7·23	3·38	12,525	1,851	413	52·76	7·78	1·74
106,869	2,267	5·67	7·34	4·20	13,292	2,082	479	52·34	8·19	1·88
100,690	574	5·67	7·71	4·28	9,722	1,470	380	41·40	6·26	1·61
105,690	.....	6·78	7·57	4·90	11,914	2,028	425	55·34	9·42	1·97
133,653	.....	5·98	7·62	4·60	10,369	2,699	538	52·99	9·27	1·85
1,432,344	4,947	5·47	8·10	4·16	158,554	27,424	6,253	46·04	7·96	1·81

S. F. HODGSON,  
*Mechanical Accountant.*

C.—PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT.

MONTHLY STATEMENT of Car Mileage for Year ended 30th June, 1898.

Month.	First Class.	Second Class and Baggage.	Postal and Smoking.	Box and Stock.	Platform.	Total.
1897—July.....	31,448	24,471	23,158	35,997	21,131	136,205
August.....	24,582	19,401	22,830	35,057	24,343	126,213
September... ..	27,786	19,312	22,705	35,205	33,507	138,515
October.....	26,503	23,503	23,536	43,261	23,807	140,610
November.....	23,392	22,158	27,482	65,764	20,035	158,831
December.... ..	24,202	22,912	18,633	48,604	6,284	120,635
1898—January.....	16,232	13,357	15,369	32,781	6,386	84,125
February.....	15,587	12,233	14,352	25,984	12,152	80,308
March..... ..	19,312	14,230	17,374	36,656	19,297	106,869
April..... ..	19,813	15,915	15,445	40,600	8,917	100,690
May..... ..	14,991	15,034	14,831	47,269	13,565	105,690
June..... ..	22,043	20,235	32,005	40,164	19,206	133,653
Total..... ..	265,891	222,761	247,720	487,342	208,630	1,432,344
Less ballasting.. ..	.....	1,390	12,009	55	78,776	92,230
Balance.. ..	265,891	221,371	235,711	487,287	129,854	1,340,114

S. F. HODGSON,  
*Mechanical Accountant.*



# Department of Railways and Canals.

## D.—PRINCE EDWARD ISLAND RAILWAY.

### MECHANICAL DEPARTMENT.

STATEMENT showing the number of Locomotives, and of the various classes of Cars and other Rolling Stock, on the 30th June, 1898.

	CLASSIFICATION OF CARS.														
	Locomotives.	1st Class.	2nd Class.	Combined 1st, 2nd & Baggage	Combined 2nd and Baggage.	Postal and Smoking.	Combined Postal & Baggage.	Baggage.	Pay Car.	Vans.	Box Freight.	Stock.	Platform.	Total.	Snow Ploughs.
On hand, serviceable, 30th June, 1897...	20	17	5	1	6	1	3	2	1	3	165	10	125	339	8
Condemned, 1st July, 1897 .....	1	..	1	....	....	....	....	....	....	....	....	....	....	1	..
Total.....	21	17	6	1	6	1	3	2	1	3	165	10	125	340	8
Transferred as follows:—															
1st Class to 2nd Class .....		1	1	....	....	....	....	....	....	....	....	....	....	....	....
Combined 1st, 2nd Class and Baggage to Postal and Baggage .....		..	..	1	....	....	1	....	....	....	....	....	....	....	....
Combined 2nd Class and Baggage to Baggage.....		..	..	..	1	....	....	1	....	....	....	....	....	....	....
Combined 2nd Class and Postal to 2nd Class and Baggage .....		..	..	..	1	....	1	....	....	....	....	....	....	....	....
Total .....	21	16	7	....	6	1	3	3	1	3	165	10	125	340	8
Condemned, 1st July, 1897 .....	1	..	1	....	....	....	....	....	....	....	....	....	....	1	..
" during the year.....	..	..	..	....	....	....	....	1	....	....	....	6	16	23	1
Rebuilt.....	1	..	1	....	....	....	....	1	....	....	....	6	16	24	1
To be rebuilt .....	..	1	..	....	....	....	....	1	....	....	....	6	15	23	1
Serviceable and repairing .....	20	17	6	....	6	1	3	3	1	3	165	10	124	339	8
Total .....	21	17	6	....	6	1	3	3	1	3	165	10	125	340	8

S. F. HODGSON,  
Mechanical Accountant.

E.—PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT.

COMPARATIVE STATEMENT of the Expenses of the Mechanical Department for the Year ended 30th June, 1898.

	1897.	1898.
The miles run by trains were . . . . .	254,029	252,894
"    engines were. . . . .	339,551	327,424
"    cars were. . . . .	1,319,903	1,340,114
"    snow-ploughs were. . . . .	10,797	4,947
	\$ cts.	\$ cts.
The cost of locomotive power was. . . . .	55,991 60	56,520 66
"    repairs to cars was. . . . .	21,124 45	19,690 72
"    "    passenger cars was. . . . .	8,988 98	7,885 15
"    "    postal and smoking cars was. . . . .	1,434 46	2,109 06
"    "    freight cars and vans was. . . . .	10,701 01	7,838 66
"    labour, oil and waste for packing was. . . . .	642 74	798 25
"    repairs to snow-ploughs and flangers was . . . . .	1,303 43	1,059 60
The cost of locomotive power per 100 miles run by trains was . . . . .	22 04	22 35
"    "    "    engines was. . . . .	16 49	17 26
"    "    "    cars was. . . . .	4 24	4 22
The cost of repairs to cars per 100 miles run by trains was. . . . .	8 31	7 78
"    "    "    engines was. . . . .	6 22	6 01
"    "    "    cars was. . . . .	1 60	1 47
The cost of labour, oil and waste for packing per 100 miles run by trains was..	0 25	0 31
"    "    "    engines was	0 18	0 24
"    "    "    cars was...	0 04	0 06
The repairs to passenger cars per 100 miles run by trains were. . . . .	3 53	3 12
"    postal and smoking cars were . . . . .	0 56	0 83
"    freight cars and vans were. . . . .	4 21	3 09

S. F. HODGSON,  
Mechanical Accountant.

Department of Railways and Canals.

PRINCE EDWARD ISLAND RAILWAY.

RETURN of Accidents and Casualties which have occurred in Canada on the line of the Prince Edward Island Railway during the Year ended 30th June, 1898.

Date.	Time of Day.	No. of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No. of Engine.	Place of Accident.	Name of Person injured.	Whether Passenger or Employee.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.
1897.												
Sept 24	9.19 p.m.	Special.	Passenger	J. B. McAnley	J. Dalziel	17	Hunter River.	J. G. McKay.	Passenger	Alighting from train	Leg crushed.	
Oct. 5	7.25 p.m.	"	Freight	J. Munroe	N. J. Love	4	Tignish	A. Jardine	Employee	While uncoupling cars.	Fingers crushed.	
Nov. 3	3.30 p.m.	5	Accommodation.	D. McKenna	J. Dalziel	5	Ellerslie	Julius McDonald.	"	While unloading freight.	Hand injured.	
" 29	2.00 p.m.	12	"	J. R. McKee.	J. Yeo	3	Morell	J. R. McKee.	"	While coupling cars.	Arm bruised.	
1898.												
Jan. 24	9.05 a.m.	1	Express	F. Kelly	{ J. Hunter A. J. McLaine	7 21	Near Traveler's Rest.	A. J. McLaine Peter McCarey	" "	Run off of train.... ".....	Body and limbs bruised.	
Feb. 12	5.47 p.m.	3	Accommodation.	J. Munroe	D. Pound	10	Kensington	J. Munroe	"	Closing box car door.	Finger crushed.	
Mar. 3	12.50 p.m.	1	"	F. Kelly	J. Yeo	3	Summerside	J. M. Enman.	"	Coming off box car.	Ankle sprained.	



## No. 2.

## CROW'S NEST RAILWAY.

MACLEOD, ALTA., 1st December, 1898.

SIR,—I have the honour to present my annual report on the condition of the line and the works that are fast drawing to completion, on the Crow's Nest Railway, during the fiscal year 1897-1898 and up to the 1st of December, 1898.

The railway was given under contract to the Canadian Pacific Railway Company, to be constructed and equipped for a subsidy of \$11,000 per mile, from Lethbridge to Nelson, the total amount of subsidy not exceeding the sum of \$3,630,000.

The line was to be opened for traffic on or before 31st December, 1898, as far as the south end of Kootenay Lake, there providing train transfer facilities, without transshipment, not later than that date, from that point to Nelson, B. C., the service to be kept up until the balance of the road to Nelson was completed and put in operation for public traffic, the contract allowing them until 31st December, 1900, to complete it.

The section of road to Kootenay Lake will be in safe condition to be opened for traffic before the close of the present month, it is equipped with rolling stock sufficient for the requirements of the traffic. Car loads of freight have already been carried from the south end of Kootenay Lake to Nelson, B. C., by water in transfer barges and steamers, thereby giving the public a traffic service before the expiration of the time limit named in the contract.

The contract specifies that steel rails of a minimum weight of 56 lbs. per lineal yard are to be used for track.

The 56 lbs. rails have been introduced on the prairie sections and on the river bottoms, where tangents and light curvature occur, the balance of the road-bed is completed with a percentage of 60 lbs. rails and fully 26 per cent of the whole 288 $\frac{3}{4}$  miles is laid with rails weighing 73 lbs. to the lineal yard.

The truss bridges of large spans on this line, both for through and deck spans are of the Howe truss, of the Canadian Pacific Railway standard, built of wood, the splicing of the lower chord members being of steel plates.

Over the Kootenay River which is navigable for steamers, an iron swing bridge has been erected over the north channel, which I consider gives ample provision to the passage of craft navigating these waters.

The trestle bridging is well designed and of the Canadian Pacific Railway standard, where necessary rows of piles driven from the mud sill of the embankments, 30 and 45 feet out, which are framed into the deck system having diagonal sill braces to ensure greater rigidity.

The position of the culverts, both box and beam, have been well chosen, the structures being strong, well put together and of sound material, in some cases stone is used, and in others cedar and Douglas fir timber. They are similar in design to those in a like country on the main line of the Canadian Pacific Railway.

The surfacing and ballasting of the road has been well advanced from Lethbridge to Jaffray station at the 173 $\frac{1}{10}$  mile. From this point to Kootenay Lake the road is about half ballasted.

At the present time a large force of men, steam shovels and working trains are employed in completing the work.

I attach a list showing the location of sidings, buildings, etc., from Lethbridge to Kootenay Landing.

Such of the buildings for sectionmen's houses and stations as are built, are roomy, of neat design and suitable for the traffic, and conform to the requirements as specified in the contract.

## Department of Railways and Canals.

Tanks of the Canadian Pacific Railway standard design, of a capacity of 40,000 gallons each, have been erected at suitable points between Lethbridge and Kootenay Lake, excepting at Cranbrook, a divisional station, and at Sirdar station, at which two points water for the present is being supplied by temporary tanks.

The road-bed throughout is of a solid, substantial character and well built.

The embankments have settled down, and become consolidated, which naturally has lessened the original width at formation level; the company are now engaged in bringing these embankments up to the contract width.

The cuttings have been formed of the widths called for by the contract, but the earth cuttings are now being further widened.

In earth cuttings the character of the material largely governs the pitch of the slopes.

In gumbo, or running clay, the slopes have been taken out at a flatter angle than  $1\frac{1}{2}$  to 1, and to give greater stability to the road-bed, and prevent disturbance of the track, 12 in. sheet piling has been driven at the foot of the slope on the upper side of the cuttings; not only has this been done, but in through cuttings of this material a base of broken rock over the full width of the bottom of the cuttings has been laid in, over three feet in thickness, which has given most satisfactory results.

Cemented material has been met with in many of the cuttings, from the Crow's Nest Lake station westward, in such cases a slope of less than  $1\frac{1}{2}$  to 1 has been adopted, which appears to meet all requirements, as they are standing well. In some of the cuttings east of the Crow's Nest station, a firm, dry, and compact soil is found, in such cases the slopes have been taken out at less than  $1\frac{1}{2}$  to 1, and so far they have stood well.

In other cuttings between Lethbridge and Macleod, a cemented material is found which is so hard and compact that blasting had to be resorted to.

As the specification calls for a slope of  $1\frac{1}{2}$  to 1, I am, until I have had an opportunity to fully satisfy myself of the sufficiency of these slopes as taken out, retaining part of the subsidy to cover the cost of flattening these slopes, if it should be found necessary after a year's experience.

The contract limits the maximum grades to 106 feet to the mile, but I am pleased to be able to report that the company has succeeded in keeping the maximum down below 60 feet to the mile, which is very satisfactory.

Owing to the mountainous character of the country and its general configuration, curves of  $10^{\circ}$ ,  $12^{\circ}$ , and in one case  $14^{\circ}$ , had to be introduced, and I see no way in which it could, at reasonable cost, have been avoided.

The company at the present time have three steam shovels employed in ballasting, widening cuttings, and filling in trestles, which are being served by the necessary trains.

Surveys have been made of the balance of the line subsidized, viz., from the south end of the Kootenay Lake to Nelson, but the final plans of location have not yet been filed in the department, as a revision of the location is in contemplation with a view of reducing the severity of the curves in some cases as now laid out.

I have the honour to be,

Your obedient servant,

GEO. R. L. FELLOWES,

*Supt. Engr. C. N. L. Ry.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,

Deputy Minister and Chief Engineer Railways and Canals,  
Ottawa.



CANADIAN PACIFIC RAILWAY.  
C. N. B. AND B. C. S. SECTION.—Location of Sidings, Buildings, &c.

Stations.	Mileage from Dunmore Junction.	Miles between Stations	Class of Building.	Buildings, R. or L.	Water Supply.	Sidings, R. or L.	Clear Stand-ing Room.	Coaling Stations.
Lethbridge	105.3	5.5					Yard.	Coal.
Six Mile Coulee	110.8	4.9				Left	1504	
St. Mary's River	115.7	9.7	Double section house	Right	Tank-pump			
Blood	125.4	6.1				Left	1412	
Belly River	131.5	2.8			Tank-pump			
Slide Out	134.3	8.5	Single section house	Right		Left	1497	
Macleod	142.8	8.9	Division station and single section house	Right	Tank-pump	Left	Yard.	Coal.
Skootchy	151.7	10.6				Left	1424	
Brocket	162.3	10.6	Double section house	Right	Tank-gravity	Left	1801	
Pincher	172.7	5.6	Second class station	Left		Right	1661	
Cowley	178.3	6.9	Double section house	Left		Right	2052	
Middle Forks	185.2	4.1			Tank-pump			
Livingston	189.3	9.0	Double section house	Right		Right	1670	
Blairmore	198.3					Left	1594	
(Summit of Rockies).	211.1	13.5						
Crow's Nest	211.8	4.9	Double section house	Left	Tank-pump	Right	940	Coal.
Loop	216.7	1.8				Right	695	
Sparwood	218.5	3.2	Single section house	Right		Right	1744	



Department of Railways and Canals.

(Coal Siding).....	221.7	2.4	.....	.....	.....	.....	.....	.....	.....
Siding No. 14.....	224.3	5.8	.....	.....	.....	.....	.....	Right	1450
Michel .....	229.9	5.6	Double section house	.....	Left	.....	.....	Right	1450
(Water Tank) .....	235.5	4.4	.....	.....	.....	Tank-gravity	.....	.....	.....
Hosmer .....	239.9	7.5	Double section house.....	.....	Right	.....	.....	Left	1510
Pernie .....	247.4	2.8	Second class station .....	.....	Right	Tank-pump	.....	Left	842 Coal.
Coal Creek .....	250.2	8.2	Double section house.....	.....	Left	.....	.....	Right	1624
Morrissey.....	258.4	7.7	.....	.....	.....	.....	.....	Left	1545
Elko .....	266.1	12.6	Second class station and double section house.....	.....	Left	Tank-gravity	.....	Right	1164
Jaffray .....	278.7	10.1	Single section house.....	.....	Right	.....	.....	Left	1608
Wardner .....	288.8	12.1	.....	.....	.....	Tank-pump	.....	Left	1781
Doris .....	300.9	9.9	Combined station and section house .....	.....	Right	.....	.....	Left	1452
Cranbrook .....	310.8	12.1	Divisional station and double section house.....	.....	Left	Tank-pump	.....	Right	Yard. Coal.
Swansea.....	322.9	9.7	Combined station and section house.....	.....	Left	.....	.....	.....	.....
Moyielle .....	332.6	8.5	Double section house.....	.....	Left	Tank-pump	.....	.....	.....
Tochty .....	341.1	10.5	.....	.....	.....	.....	.....	Left	1610
Yahk.....	351.6	5.1	Double section house.....	.....	Right	Tank-pump	.....	Left	1491
Goat Fell.....	356.7	9.6	.....	.....	.....	.....	.....	Left	1602
Kitchener .....	366.3	8.9	Double section house.....	.....	Left	Tank-gravity	.....	Right	1744
Spur .....	375.2	3.0	.....	.....	.....	.....	.....	.....	.....
Fisher .....	378.2	12.7	Double section house .....	.....	Right	.....	.....	Left	1467
Sirdar.....	390.9	3.0	Double section house and 3-stall engine shed.....	.....	Left	Tank-gravity	.....	Right	Yard. Coal.
Kootenay Landing.....	393.9	.....	Station building .....	.....	Right	.....	.....	.....	.....

G. R. L. FELLOWS,  
*Supl. Engineer C. N. L. Railway.*

## No. 3.

## CANALS.

## SAULT STE. MARIE CANAL.

## SUPERINTENDENT'S OFFICE,

SAULT STE. MARIE, ONT., 3rd August, 1898.

SIR,—I beg to submit my third annual report upon the operation of the above canal for the fiscal year ending 30th June last.

The canal was closed for the season last year on the 14th day of December, having been in continuous operation for 238 days and at that without any serious delays of any kind to vessels, and this spring was reopened for traffic on the 11th day of April.

Owing to the necessity of making some alterations to their canal the American lock closed down some four days earlier than this one, and this spring owing to the non-completion of the same, their canal was not opened for traffic until some seven days later than this one.

During the fiscal year just ended there has been made some 3,141 lockages, passing through 4,767 registered and non-registered craft with a total tonnage of 4,118,492 tons, with an average time of fourteen and one quarter minutes to a lockage; of this tonnage only some 395,436 tons was Canadian. This apparent smallness of tonnage does not represent by any means the total amount of Canadian tonnage engaged in the Lake Superior traffic, but is accounted for by reason of a great many of the Canadian vessels (passenger ones especially) using the American lock almost entirely.

The arrangement made with the American canal officials for a daily exchange of vessel reports has been carried out this season the same as formerly, thus securing a full report of the Lake Superior traffic; and as these statistics are taken from verified reports of cargoes furnished by captains of vessels passing through the different canals, there is no doubt of their correctness.

There being a difference of some eighteen feet between the level of Lake Superior and the St. Mary's River at this place, to surmount this difference and to accommodate the ever increasing Lake Superior traffic, locks of various sizes have from time to time been erected. The first one built was in the year 1797 and is said to have been the first lock ever built on the North American continent, and was built and used by the Hudson Bay Company. It was 40 feet long, 9 feet wide and had a total lift of 9 feet and the boats were towed from the end of the lock up a sluiceway by oxen the balance of the distance to Lake Superior. The site upon which this primitive lock was built is now preserved and used as a fish-pond by the Lake Superior Power Company, upon whose lands it is located, and the oaken floor, as it was laid over a hundred years ago, is there now in apparently as good a state of preservation as the day it was laid. Locks of various sizes, and from time to time have been built, until at the present time, there are three locks in operation, two on the American side and one on the Canadian. The larger one on the American side, or what is known over there as the "Poe Lock" (so called after the late General Poe, its designer and engineer in charge during construction), is 800 feet long and 100 feet wide, whilst the Canadian lock is 900 feet long and 60 feet wide and is said to be the longest lock in the world. Both of these locks can pass vessels drawing 20 feet of water.

It should be a matter of gratification and pride to Canadians generally to think that within a few hundred feet of the spot, which was then a howling wilderness, where



Department of Railways and Canals.

their forefathers erected the first lock ever built on this continent, that Canada has built and has in operation, within a century, the longest lock in the world.

A perusal of the following table will give in some measure an idea of the necessity of these immense locks and of the vastness of the Lake Superior traffic and of its great increase in the last decade, from an estimated value of \$79,031,757 in the year 1887, up to that of \$218,235,927 during the season of 1897, whilst the tonnage of vessels carrying the same has increased from 4,897,598 tons in the former year to 17,619,933 tons during last season.

Year.	Number of Vessel Passages.	Registered Tonnage of Vessels.	Total Tonnage of Freight.	Cost of Carrying per Mile. — Ton.	Estimated Value of Freight Carried.	Proportion of Freight Carried in Canadian Vessels.
				Mills.	\$	Per cent.
1887 .....	9,355	4,897,598	5,494,649	2 <sup>3</sup> / <sub>10</sub>	79,031,757	7
1888 .....	7,803	5,130,659	6,411,423	1 <sup>5</sup> / <sub>10</sub>	82,156,019	6
1889 .....	9,579	7,221,935	7,516,022	1 <sup>5</sup> / <sub>10</sub>	83,732,527	4
1890 .....	10,557	8,454,435	9,041,213	1 <sup>3</sup> / <sub>10</sub>	102,214,948	3 <sup>1</sup> / <sub>2</sub>
1891 .....	10,191	8,400,685	8,888,759	1 <sup>35</sup> / <sub>100</sub>	128,178,208	4
1892 .....	12,580	10,647,203	11,214,333	1 <sup>31</sup> / <sub>100</sub>	135,117,267	3 <sup>8</sup> / <sub>10</sub>
1893 .....	12,008	8,949,754	10,796,572	1 <sup>1</sup> / <sub>10</sub>	145,436,957	4 <sup>1</sup> / <sub>8</sub>
1894 .....	14,491	13,110,366	13,195,860	1 <sup>99</sup> / <sub>100</sub>	143,114,502	3 <sup>1</sup> / <sub>5</sub>
1895 .....	17,956	16,806,781	15,062,580	1 <sup>14</sup> / <sub>100</sub>	159,575,129	3 <sup>5</sup> / <sub>4</sub>
1896 .....	18,615	17,249,418	16,239,061	1 <sup>99</sup> / <sub>100</sub>	195,146,842	4
1897 .....	17,171	17,619,933	18,982,755	1 <sup>83</sup> / <sub>100</sub>	218,235,927	3

In the above table I have included the cost of carrying this freight per mile, ton, and year by year as the larger vessels have come out this cost has decreased. This season the record-breaking cargo has gone over the 7,000-ton mark, and it is expected that before the snow flies that some of the larger ones now on the stocks will have equalled if not extended beyond the 8,000-ton mark. These large carriers are forcing the smaller ones to be laid up, and anything smaller than 2,000 tons except for lumber and some local purposes, will soon be things of the past.

Very slight damage has been done to the piers or lock by vessels using the same.

All the machinery in the power house and the gate and valve machines have been gone over and thoroughly overhauled and repaired.

The office, power house and the motor houses have all received two coats of paint where necessary inside and out.

A new No. 8 Wood arc lighting dynamo has been purchased, and when installed will give us an increased capacity of some 20 more arc lamps, and the old one will be retained for use as an auxiliary machine in case of accidents.

Contracts have been let, and the dredging off of part of the elbow on the south side of the lower entrance is being proceeded with, and when this is finished with and vessels have the use of the increased width of channel, it will be a vast improvement. To complete this improvement, the south pier should be extended out some 700 or 800 feet, so as to give more room for vessels to tie to at night after locking down whilst waiting for daylight to enable them to proceed on down St. Mary's River to Lake Huron. Our present pier on that side is too short, and in consequence thereof we have had vessels tied up at both piers below the lock, making it very difficult as well as dangerous for up-bound boats to enter the lock without doing some damage to the vessels lying at the north pier.

The pier of the railway swing bridge standing in the centre of the canal above the lock is the same menace to the vessels using the canal and still calls for the same remarks of condemnation from vessel captains as formerly in other seasons.



Vessels have struck it several times, doing some little damage to themselves though none to the pier. The removal of this pier would no doubt remove what is considered by all vessel men a serious obstruction to the operation of the canal.

The machinery as a whole is in good working order and is giving good satisfaction and during its operation very little injury has occurred to it.

The gates have been repainted, new bolts put in where broken ones have been found. Floating logs and timber have been a cause of great deal of trouble at the upper end and some holes have been unavoidably punched through the decking of the gates, but in nowise caused any delay to the operation of the lock.

The pontoon or gate-lifter has been repainted and thoroughly rebraced on the inside.

That the adoption of the long narrow form of lock, and its operation by electric power has been proved by the quickness of despatch in locking vessels through to be the best form of lock adapted to the traffic as compared with the wider form of lock on the American side which is operated by hydraulic power. The average time of making a lockage, including all delays to vessels in this lock, amounting to only fourteen minutes and fourteen seconds, whilst that of the American lock averaged thirty-six minutes and thirty-one seconds.

This season some levelling up of the grounds has been done and trees planted greatly adding to the appearance of the grounds generally. Quite an amount of this kind of work remains to be done and it would be a manifest improvement to the general surroundings of the canal if it was done.

I have the honour to be, sir,  
Your obedient servant,

J. BOYD,  
*Superintendent.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,  
Deputy Minister and Chief Engineer,  
Railways and Canals.

# Department of Railways and Canals.

## SOULANGES CANAL.

COTEAU LANDING, P.Q., 7th September, 1898.

SIR,—I have the honour to report as follows on the progress of the works of the Soulanges Canal.

The subjoined list gives the names of the contractors and the dates of the various contracts:—

Sections Nos. 1 and 2 : (1.) Archibald Stewart, 24th September, 1892.  
(2.) Ryan & Macdonell, 11th December, 1897.

Section No. 3: J. & M. O'Leary, 27th March, 1893.

Sections Nos. 4, 5, 6 and 7 : (1.) George Goodwin, 9th May, 1893.  
(2.) Andrew Onderdonk, 17th April, 1897.

Section No. 8, Charles H. Raynor, 29th December, 1892.

" 9, Randolph Macdonald, 30th January, 1893.

" 10, Rogers & Taylor, 24th December, 1892.

" 11: (1.) George Goodwin, 11th May, 1892.

Transfer (2.) Thomas Feeney.

" (3.) Poupore & Fraser.

Section No. 12: (1.) Denis O'Brien & Son, 8th April, 1892.

(2.) George Goodwin, 9th May, 1893.

(3.) M. J. Hogan, 5th April, 1897.

Section No. 13: Randolph Macdonald, 24th September, 1892.

The total value of work, let and relet, as per above list, is now about \$3,750,000. This does not, however, include the cost of superstructure of bridges, lock gates, sluices, machinery, cement, or the power house and electrical apparatus for operating and lighting the canal.

The canal is 14 miles long, and is built throughout on the line located by me in 1890. The rise of 82½ feet between Lakes St. Louis and St. Francis is overcome by four locks. Three of these, each of 23½ feet lift, occur in the first mile from the Ottawa River. There is then a reach of some 2½ miles to the fourth lock, which has a lift of 12 or 13 feet to low water level of Lake St. Francis. The summit is 10½ miles long. At its western end there is a guard lock, supply weir and other structures. The lake fluctuates some five feet, but this extends over a long series of years; the annual variations being comparatively small. The lowest water of which there are authentic records occurred in November, 1895. Twice during that month the lake surface was only 151·88 over mean tide at New York, at which time there was, however, 14·55 feet at the upper entrance of the canal and 14·83 feet on the mitre sill of Lock 1. At mean water there will be from 17 to 18 feet in the long level. The canal is, for purposes of navigation, a straight line throughout.

The present condition of the works may be briefly described as follows:—

*Sections Nos. 1 and 2.*—The completion of these sections was let to Messrs. Ryan & Macdonell in December, 1897. Excavation was carried on during the winter of 1897-8, and arrangements made to provide additional stone and other materials for the building of the locks, weirs, &c. Lock No. 1 was finished early in June. Lock No. 2 is practically completed. The foundations of No. 3 are being rapidly concreted. The regulating culverts at No. 1 are well advanced and those at No. 2 completed. Several splaywalls are either finished or in progress. About 31,000 cubic yards of masonry and concrete have been laid so far this season. If this rate is maintained the structures will all be built this year, or early next spring, notwithstanding the drawbacks experienced by the present contractors.

It is probable that the earthwork at Lock 2 and all to the eastward of it will be done this fall. But in order to be in a position to carry on the work of these sections at the rate required. Messrs. Ryan & Macdonell had to expend between \$70,000



and \$80,000 in the purchase of suitable plant, such as building derricks, steam shovel, engines, track, cars, &c. Their operations have been conducted in an energetic and quite satisfactory manner.

*Section No. 3* is completed, and was accepted from the contractors last fall. The north side, however, is much cut up and the road disfigured by hauling stone over it during the winter and spring. Some expenditure will be required to put it again into proper shape.

*Sections Nos. 4, 5, 6 and 7.*—This contract was relet to Andrew Onderdonk in April, 1897, at which time there were approximately 850,000 cubic yards of earthwork to complete. About 1,200,000 cubic yards of by far the easiest part had been taken out by Goodwin and the work then abandoned. The masonry and concrete, of which there were about 40,000 cubic yards, were untouched, not a stone having been prepared or delivered four years after the signing of the previous contract. The lower part of the prism is chiefly in blue clay, difficult to handle, especially in wet or frosty weather, and in some cases the material has been hauled over four miles. Of this about 450,000 cubic yards are taken out to date, leaving 400,000 yet to do. Considerable additions are now being made to the plant, on which over \$100,000 has been already expended by Mr. Onderdonk.

The masonry of Lock No. 4, which rests on a pile foundation, is completed. The work is excellent. The stone has been procured from a quarry at Crookston, Ont. It is a sound gray limestone provided and cut according to the specification, and promptly furnished by Messrs. Quinlan & Co., who deserve special mention on that account. The foundation of the guard gates, weir, sluice, &c., are being rapidly concreted. The masonry of sections 4, 5, 6 and 7 will doubtless be entirely completed this season; but it is, in my opinion, not now possible to finish the earthwork, &c., until next year. About 60,000 cubic yards of stone will have to be hauled from section 11 during the coming winter to be used in the protection lining of these sections. About five miles of macadam road must also be built and a large amount of sodding and trimming done.

*Section No. 8.*—On the 25th October, 1897, a heavy slide took place on the north side of this section at the crossing of the St. Emmanuel road. This swept the abutment of the road bridge, containing about 1,100 cubic yards of concrete, off its pile foundations, and threw it bodily some 50 feet into the bottom of the canal where it sank into the soft blue clay for a depth of about 19 feet. About 40,000 or 50,000 cubic yards of earth accompanied it. That portion of the concrete abutment which cropped up over the grade line of the bottom was removed by blasting, and the prism has been cleaned out so that the required navigable depth and width have been amply secured. A temporary timber approach has been made to the bridge from the north side in lieu of the concrete abutment. The public travel is now carried across this. The macadam road, stone lining and sodding are completed as far as this can be done.

A set of regulating culverts to control the summit level were designed to occupy the space left for that purpose in the south embankment of this section near the crossing of the River à la Graisse. The contract for this structure was let to Mr. C. H. Raynor in March last. It was subsequently considered advisable to revert to the original plan of placing a power house at this point to operate and light the canal by means of electricity. The arguments in favour of this site are given in my previous reports. The combined structure is now fairly under way and the pile and concrete foundation are being rapidly put in. It is expected that the whole work will be so far advanced this fall that it can easily be completed, and the connections made throughout, next spring.

*Section No. 9.*—The slides referred to in my last report as having occurred extensively on this section have been partly repaired. It is confidently expected that the north side will be restored this fall by placing stone for support and drainage at the base of the slopes, and then filling in. This plan has so far answered well and there is no reason why the canal should not be ready for navigation through Section No. 9 at the close of the present season—that is if the contractors push the work as they ought. I have described the manner in which the earth of this section was taken out in my last annual report.



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*Section No. 10.*—Small slides occurred also on the north side of this section. But these have been repaired and the work is now practically completed.

*Section No. 11.*—Much dilatoriness has been shown by the contractors for Section 11 in carrying on the work, which could easily have been completed last year. I do not doubt, however, that it will be finished this fall.

*Section No. 12.*—This section was in very bad shape when the present contractor took hold of it last summer. It had been skinned of the easiest part of the material by Messrs. O'Brien & Goodwin—and then abandoned. Mr. Hogan, however, set energetically to work and has spent over \$60,000 in plant already. The excavation varies from hard fissured rock to quicksand, and is very difficult indeed. The progress made is consequently slow, although no effort has been spared to push on the work. 385,376 cubic yards of earth and 60,727 cubic yards of rock have been taken out to date. But there yet remain about 65,000 cubic yards of earth and 60,000 of rock to excavate. It will require more plant, and the most strenuous exertions on the part of the contractor to finish the work of this section by next May.

*Section No. 13.*—Considerable progress has been made here this season. The masonry of the guard lock is now about two-thirds done and the retaining walls, &c., well advanced. The total amount of masonry and concrete on this section is say 40,000 cubic yards, of which about 30,000 are completed to date. A large amount of stone has to be cut yet, however, and the contractors must not be permitted to relax their efforts if it is intended that the work of this section shall be completed next spring. The approach from Lake St. Francis has been dredged to a general depth of  $16\frac{1}{2}$  feet at extreme low water (152.50), but some large boulders have to be removed before the full depth is obtained throughout.

The approximate quantities of the chief items of work done to the 31st August, 1898, are as follows:—

Section Number.	Earth.	Rock.	Masonry.	Concrete.	Total masonry and concrete.
1 and 2 .....	368,800	55,330	11,734	42,400	54,134
3 .....	587,000		195	3,307	3,505
4, 5, 6 and 7 .....	1,557,970		3,572	26,016	29,588
8 .....	814,893		378	5,546	5,924
9 .....	557,400				
10 .....	539,400	3,050	1,421	7,061	8,482
11 .....	454,023	93,560	1,324	4,865	6,189
12 .....	385,286	60,727		20	20
13 .....	572,240	17,133	15,523	13,820	29,343
Totals done .....	5,837,012	229,770	34,147	103,098	137,245
Done in 1898 .....	619,497	61,370	17,597	55,365	72,962
To be done to complete (rough approximation) .....	912,988	80,230	15,853	46,902	62,755

It will be seen from the foregoing table that the total earth excavation is taken at  $6\frac{3}{4}$  millions. Of the 912,988 shown as yet to be done a considerable part is for trimming and also repairing slides. Only about half the amount will have to be taken out to permit of navigation through the canal. There is roughly about 50,000 cubic yards masonry and say 150,000 of concrete in the whole work. Nearly 20,000 cubic yards of masonry and concrete have been done each month for June, July and August, 1898. If this rate could be kept up until the end of November, the whole would be practically completed. This is barely possible, but the most strenuous efforts will be made to accomplish it. Much, of course, will depend upon the weather, which has been so very favourable up to date this season, that a continuance of it



can scarcely be expected. The total expenditure on the above named contracts to the 31st December, 1897, was \$2,555,617.75, and to 31st August, 1898, \$3,025,695.99, as shown by the progress estimates.

There are eight bridges. Of these one is a railway bridge on section 13, carrying the Canada Atlantic over the foot of the guard lock; two are short bridges across the upper wings of Lock No. 3 and the guard lock, and the remaining five carry the country roads over the canal at St. Antoine, St. Féréol, St. Dominique, St. Emmanuel, and River Rouge. The railway bridge has been in use for years. The bridges across the locks are contracted for but not erected, and four out of five of the bridges across the canal are in place; that at St. Dominique will, however, be completed this fall, so that the whole will be in use next spring.

The lock gates were let to J. & R. Miller on the 2nd October, 1897, and are nearly completed. They are built on the old plan of solid timber, which in this case is British Columbia fir. This was hauled by rail across the continent. The workmanship is excellent throughout, and is most creditable to the Messrs. Miller. The lower gates of Lock No. 1 will be stepped shortly. The lifting pontoon built at Ste. Anne de Bellevue will be used in the erection of all the gates. There are altogether sixteen pairs including spare gates. The lower gates of Lock Nos. 1, 2 and 3 are 40 feet high and each leaf weighs about 95 tons in the air.

The Stoney sluices for locks, weirs, &c., are on a plan modified from that adopted on the Manchester Ship Canal and elsewhere. The work of constructing and erecting them was let to the Dominion Bridge Co. of Lachine, on the 29th July, 1898. There are in all 40 gates of various sizes. Those for Lock No. 1 are being erected in place and the whole will shortly be completed.

The operating struts and machinery for opening and shutting the lock gates have not yet been let, but the drawings are well advanced, and the work will soon be put under contract. The method adopted was tried on a small scale at Lock No. 9, on the Beauharnois Canal and answered well. It greatly simplifies the operation of the gates by doing away with cables, chain-wells, sheaves, &c. This principle is applied to the gates of the North Sea Canal.

As previously stated, a set of regulating culverts was designed to control the summit level by discharging into the River à la Grasse instead of through the locks at the Cascades end, in case it should become necessary to rapidly lower the water of the canal. This work was let to Charles H. Raynor on the 1st March, 1898. Shortly after the foundations for these were begun, it was decided to revert to the original plan of placing the power house at this point also. The hydraulic development connected with it was entrusted to Mr. H. C. Rice of Dayton, O. and the electrical arrangements are in the hands of Mr. M. W. Browne, General Manager of the Royal Electric Co. It is expected that the power house will be finished and all the connections for operating and lighting the canal made and ready for use next spring.

I have frequently drawn attention to the importance of the question of cement in relation to hydraulic works. With a view of establishing a reliable system of tests here a small but suitable plant was purchased in 1891-92, and since that time a great many brands of cement have been tested, and the results carefully tabulated. About 60,000 briquettes have been made, almost entirely with the Faija mixer, and great caution has been exercised in conducting the experiments. Based upon information thus obtained specifications have been prepared and contracts to the extent of about 190,000 barrels let to various parties. Up to date about 130,000 barrels of Portland cement have been used in the canal. The brands are chiefly "Josson," "Condor," "Alsen," "Dyckerhoff" and "Hemmoor," all an excellent article. Without sound cement it is impossible to build a safe hydraulic wall, and the quality of the cement can only be known by frequent testing. The experiments here have so far been most satisfactory, as can be readily seen on an examination of the works. The amount expended to date on cement is about \$300,000. The average cost per barrel is about \$2.35 laid down on the work. But the price for low grade Portland is very much less. It is probable that the average amount used per cubic yard of masonry and concrete will be about nine-tenths of a barrel—but our experience has of late tended to diminish this.

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I may state in conclusion that in my report dated 5th November, 1892, I recite the differences between the plans of structures, &c., of the Soulanges Canal and those of the enlarged Welland, Cornwall and Lachine Canals. I may now repeat, as the works draw to a close, that these changes have been carried out; and it is believed will constitute a marked practical improvement in canal construction and maintenance. The principal questions have only been touched upon—but it will be seen from the foregoing that the rate of progress has been greatly increased during the present season; and no effort will be spared to comply with the desire of the Government that the Soulanges Canal shall be ready for traffic in the early part of next summer. If this is accomplished, the credit of doing so will be almost entirely due to the exertions of the various contractors, most of whom have shown a gratifying desire to push on the work, sometimes under quite disadvantageous circumstances.

I am, sir,

Your obedient servant,

THOMAS MONRO,

*Engineer Soulanges Canal.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,

Deputy Minister and Chief Engineer

Railways and Canals.



## MONTREAL DIVISION.

## SUPERINTENDING ENGINEER'S OFFICE,

MONTREAL, 28th October, 1898.

SIR,—I have the honour to hand you herewith my annual report upon the works under my charge for the fiscal year ended the 30th June, 1898.

The canals in this division were closed and opened to navigation on the following dates:—

	Closed.	Opened.
Lachine Canal .....	1st Dec., 1897.	25th April, 1898.
Beauharnois Canal .....	30th Nov., 1897.	24th April, 1898.
Ste. Anne's Lock.....	30th Nov., 1897.	11th April, 1898.
Carillon and Grenville Canals	30th Nov., 1897.	30th April, 1898.
Chambly Canal .....	1st Dec., 1897.	2nd May, 1898.
St. Ours Lock.....	27th Nov., 1897.	3rd April, 1898.

## LACHINE CANAL.

## REPAIRS.

The only interruption to the traffic on this canal during the year was caused by the breaking, in the beginning of September, 1897, of two of the Montreal water-works pipes crossing the canal at Atwater Avenue. The city authorities had been notified in good time to put those pipes out of the reach of the contractor's dredges, but failed to do so, with the above results.

The repairing of the pipes necessitated the unwatering of the canal, and in order to interfere with navigation to the least possible extent, this was done on the three Sundays following the accident. However, the canal had to be closed for a few hours on Mondays. Mr. L. G. Papineau superintended the work, which was done by the canal repair staff, the city paying all expenses.

The extension of the electric lights circuit to Côte St. Paul, last year, has proved a decided improvement on the old system of coal oil lamps. The new Seigneurs Street swing bridge, as well as the Wellington bridge, is now operated by electricity, the power being supplied by the Montreal Street Railway, according to agreement.

Among the most important works performed under the head of repairs during the fiscal year, the following may be mentioned:—

Macadamizing part of Mill Street, the approaches to bridges Nos. 1, 2, 3 and 4, and a piece of road about 4,000 feet in length on the north bank of the canal above Côte St. Paul bridge; replacing an old box drain on the south side of the canal, above Côte St. Paul, by a 15-inch tile drain 1,800 feet in length. This work will do away with claims for damages which had been constantly coming in of late years, as the farms at that point, which used to be flooded each spring and after heavy rains, are now thoroughly drained by it.

While the canal was unwatered in April last, all the structures were carefully examined and put in good working order, special attention being given to lock bottoms and waste weirs. The supply weirs at Lachine and the various walls connected with them were found in a very dilapidated condition, and as much of them repaired and pointed as time would permit then. The balance of the work will be done at low water this year.

A considerable amount of work was done in connection with the slope walls above Côte St. Paul pending their reconstruction. In a number of places the banks

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were lined with two or three rows of timber started a few feet below water line and a temporary wall built over them to a foot below the top of the bank. The stone for this purpose was supplied by our dredge, from the deepening done last fall at the Canadian Pacific Railway bridge, near Lachine.

The repairing of the wharfs around basin Nos. 1 and 2, St. Gabriel, which was commenced last year, is now completed.

The roofs of the flour sheds on basin No. 2, were covered with Canada plates last fall; the work, which was a pretty extensive one, was done under contract with Messrs. Dufort & Barette.

All the other structures and buildings were kept in good order during the year.

Before concluding this part of my report, I beg to call attention to the dangerous state of old Lock No. 1, (Montreal). During April last, I made a thorough examination of it and found the masonry, especially in the vicinity of the upper gates, in a tumbling down condition. The most urgent repairs were made at the time in order to keep the lock in working order for the coming season. However something more than patching up will have to be done at an early date, as collapse of one of the entrance locks here would be disastrous. Either both locks Nos. 1 and 2 should be rebuilt or replaced by a single high lift, one as proposed some years ago. As you no doubt remember, an amount of \$50,000 was appropriated in 1894-95 for making a survey and expropriating land in connection with the scheme, but nothing further than the survey has been done. The construction of this lock will necessitate the closing of the present old ones for a couple of years and, in view of the rapidly increasing traffic at the port of Montreal, the sooner the work is done the better.

### REPAIRS TO VESSELS.

The dredging fleet, composed of dredge No. 2, steam derrick No. 2, and eleven flat scows, together with the steam tug "Josephine" and the house-boat used by the Lake St. Louis engineering staff, received the usual amount of attention last spring.

All the boats were caulked, patched up, painted and otherwise put in working order for the opening of the season.

### CAPITAL.

*Deepening to 14 feet navigation between St. Gabriel and Lachine Locks.*—This work is under contract with Messrs. McNamee & Mann. During the last fiscal year there were removed from the channel 69,759 cubic yards of earth and 42,775 cubic yards of rock. The dredging operations will be continued until the end of November next, when the work will be completed with the exception of some cleaning at the foot of the walls on both sides. This will be done while the canal is unwatered next spring.

*Dredging Channels at Canadian Pacific Railway Bridge.*—The excavation at this point was continued in November, 1897. A drill boat, hired from the Montreal Harbour Commissioners, was used during three weeks. In April the drilling was resumed with steam drills, and the rock then blasted was removed by canal dredge No. 2, all suitable stone being saved for use in the slope walls.

*Slope Walls.*—As stated in my last annual report these walls are in urgent need of repair and rebuilding, in a number of places. At a point opposite Montreal West, the whole wall, on the south side, had fallen down on a distance of 300 feet. This was rebuilt, in April, with large stone procured from the canal bottom, and the walls on both sides temporarily repaired at many points.

*Seigneurs Street Swing-Bridge.*—This work was authorized by Parliament during the session of 1897, and two contracts for it were awarded in January, 1898, one for masonry, &c., to Mr. O. Martineau, and the other, for the superstructure, to the Dominion Bridge Co.



The substructures comprised a new pier built of concrete, with a cut stone top or turntable; new abutments, ballast and parapet walls for the swing bridge; the extension of the lock wall at the south-west side of the bridge, also various changes in the abutments and middle pier of the stationary bridge across the head race of the canal supply weir.

The new swing is a steel structure 139 feet long and 37 feet wide, giving ample space for an electric railway track, two roadways for vehicles and sidewalks on each side. This bridge is worked by electric power. The stationary bridge is also built of steel. It is 75 feet in length and 38 feet in width.

The erection of the metal structure was commenced on the 10th April and completed during the first week of May, 1898.

*Deepening River St. Pierre.*—This work is in continuation of the drain along the Lachine Canal which was commenced in 1891, the drain proper having been completed in 1894. The lower course of River St. Pierre is now being deepened and widened in order to carry the excess of water brought into it by the said drain without raising the level of the stream.

Tenders for the work were invited during May, 1898, and the contract awarded to Messrs. Brewder & McNaughton on the 4th June following. Operations were commenced a few days later and are now progressing.

*Syphon Culvert.*—As the intended bottom line of the deepened river strikes the pipes of the Montreal waterworks, it has been found necessary to divert the stream and carry it underneath the said pipes by means of a syphon culvert. This syphon will consist of five parallel lines of cast iron pipes 160 feet long and 4 feet in diameter bedded in concrete with masonry inlet and outlet wells, and dry walls on both sides of the approaches.

At the end of June the outlet had been completed. The work is being done by day's labour.

The deepening of the Lachine Canal, the rebuilding of the slope walls, the erecting of the new Seigneurs Street bridge and the deepening of River St. Pierre are under the immediate supervision of Mr. L. G. Papineau.

*Lake St. Louis Channel.*—This work is under contract with "The Weddell Dredging Co." Two dredges, the "IXL" and the "Trenton," have been engaged on it every day, except Sundays, from the hour of 4 in the morning to 8 at night, during the periods extending from the 1st July to the 27th November, 1897, and from the 6th April to the 30th June of the present year, removing together, from the channel, 58,680 cubic yards of material, mostly "hard-pan."

Since the beginning of the work, in June, 1895, the contractor's dredges have handled 193,075 cubic yards of materials of all kinds.

The channel will be opened to navigation at the beginning of the season of 1899.

## BEAUHARNOIS CANAL.

### REPAIRS.

A serious accident occurred on this canal on the 10th June last, when a serious washout took place at the lower gates of lock No. 11.

The canal was unwatered during the following night, and repairs commenced early the next day. Quite a fleet of grain barges being gathered at the head of the canal, and the shippers being extremely anxious to get it through, boats were allowed to pass two days later, before the repairs could be completed, it being the intention to resume work on the following Saturday. However, orders having been received to keep the canal open on that day, chances had to be taken as to the lock holding for another week. Unfortunately it again gave way on Thursday, the 22nd June, and navigation had to be interrupted a second time on the 23rd. Preparations had already been made to complete the repairs. A steam pump and a lot of cement had been sent up from Montreal, and broken stone, sand, clay, timber and lumber carted to the spot from various points along the canal. The canal operating and repair



## Department of Railways and Canals.

staffs and as many outside men as could be gathered in the vicinity were engaged and put to work under the supervision of Mr. L. G. Papineau, one of my assistants in Montreal.

Two cofferdams had to be built, one at each end of the lock, and on the evening of Thursday the lock was pumped dry. When the platform above and below the sill was ripped up, it was found that nearly the whole area under it had been scoured out to a depth averaging four feet and reaching seven feet in the centre. The sill itself had been raised about eight inches and considerably damaged. Immediately above the platform the timber foundation of the lock chamber had sunk about three feet from the centre line of the lock to the north wall, and a cavity existed under this wall some thirty feet in length, by an average depth of three feet, and a width of four to six feet.

The hole, under the platform, was filled with clay carefully pounded and three rows of tongued and grooved 3-inch pine plank driven all the way across the recess, one at the end of the mitre sill platform, the second half way between this and the sill and the third one immediately below the sill.

Four feet below the upper row of sheet piles, a partition made of 1 inch boards was placed and the space between the two filled with concrete. As to the sill, after having been driven down to its proper elevation and thoroughly repaired it was also filled with concrete as well as the hollow under the lock wall. The whole of the platform was then relaid, two thicknesses of 2-inch tongued and grooved pine being used. During the progress of the work it had been found necessary to bring some carpenters from the Lachine Canal staff in order to have the repairs completed by Sunday the 27th. This was accomplished and boats locked through about midnight on that day.

The force employed during the five days over which the repairs extended averaged about forty men. They worked eighteen hours each day, and I must say that they worked with a will, in spite of an almost continuous rain. I cannot give too much, praise to the engineer in charge Mr. Papineau, and to the canal superintendent for their unrelenting efforts in pushing the work to completion.

The various structures on this canal received the usual attention throughout the year. The work done under that head comprised among other items, the building of two pairs of spare gates for Locks Nos. 6 and 14 respectively, the tearing down and rebuilding of a wing wall at the head of Lock No. 13; the overhauling of the swing bridge at Lock No. 10; the stopping of a serious leak through the north bank about a mile above St. Timothée bridge; the macadamizing of some three miles of road on the south bank and along Hungry Bay dyke, &c.

### INCOME.

*Improving Upper Entrance.*—This work commenced in June, 1897, was continued until the end of October in the same year by Dredge No. 2. The bottom here consists of large boulders tightly packed together. About 11,000 cubic yards of this material had been removed when the appropriation got exhausted. Although the work contemplated could not be fully completed the channel was left in a much improved condition.

### STE. ANNE'S LOCK.

#### REPAIRS.

There is nothing to record here beyond the usual repairs to the locks and the various structures connected therewith. Navigation was conducted without an hour's interruption throughout the year.

## CARILLON AND GRENVILLE CANALS.

## REPAIRS.

Under this head the usual amount of work was performed in connection with locks, lock-gates, bridges, buildings, towing paths, fences, &c.

The boom-piers at the upper entrance to the Carillon Canal, which had been carried away during the spring floods of 1897 were rebuilt; the collector's office at Carillon was overhauled; the towing path along the Grenville Canal in the vicinity of Grenville was levelled up and macadamized on a length of about 1,500 feet; a shed for storing spare lock-gates, 50 x 35 x 10 feet, was erected on the south bank of the canal between locks Nos. 5 and 6, and a large gate-lifter 70 x 22 feet, with powerful derricks, was built to replace the old one which was worn out.

## INCOME.

The puddle-trench on the Innes property, for which an amount of \$900 had been appropriated, was built, and the leak at that point successfully stopped.

A pair of spare gates for lock No. 2 were built during the winter months. This pair completes a full set of spare gates for both canals.

The south bank of the Grenville Canal, a short distance below lock No. 6, was lined with boulder wall 215 feet long on a height of from 8 to 10 feet. It is the intention to continue this wall up to the foot of the lock-wing wall next winter.

## CHAMBLY CANAL.

The permanent operating staff on the Chambly Canal, being mostly composed of mechanics, are always employed at the shops during the winter months preparing materials for the year's repairs. These men, who would have to be paid their wages in any case, during winter, are thus made use of, and the cost of maintaining the canal is thereby considerably reduced.

## REPAIRS.

This canal is in a very good state of repair. Among the most important works performed during the year, I may mention the strengthening of the western wing-wall of the lower entrance lock; the lowering of the breast wall of the waste weir at the foot of Ste. Thérèse Island; the renewing of the pivot of swing bridge No. 8; the rebuilding of 510 feet of wharf at St. Johns; the building of a repair scow 60 x 16 feet, with derrick, &c., and the converting into a metallic circuit of a part of the canal telephone line.

## INCOME.

*Gravel on Tow-path.*—The \$1,500 appropriated towards laying a coat of gravel on the towing-path, were expended during the year—2,083 tons of gravel were purchased at the rate of 63½ cents, and spread on a length of about three miles.

*Rebuilding Abutment Wall at Lock No. 8.*—For some years past the east abutment wall between the combined locks Nos. 7 and 8, had gradually been displaced by the action of frost, and the width of the lock entrance, already not one inch too great, reduced in consequence. It had therefore become necessary to take down the said wall and rebuild it in its proper position. It is composed of rubble masonry, faced with heavy pine timber from the bottom to a height of 17 feet, on top of which is cut stone masonry 9 feet high. The latter was first removed and the timber face below, being found perfectly sound, was planed off so as to bring it in line with the face of the lock chamber wall. Bolts were driven through the timber to the back of the masonry and firmly anchored to vertical tamarack posts, after which the cut stone masonry was rebuilt.



## Department of Railways and Canals.

### DRAINAGE WORKS AND CULVERTS AT ST. JOHNS.

*Wood's Creek Syphon Culvert.*—This work was completed during the months of January and February last. As stated in my last annual report, the culvert is composed of four arched conduits 154 feet in length, with inlet and outlet, all of concrete, and with passage-ways of an aggregate area of 59 square feet. The part of the conduits built in 1897 was carefully examined last winter, and the concrete found perfect without a crack or flaw of any kind.

*Collecting Drain and Syphon Culvert.*—On the 9th of January, 1898, a contract for the construction of a collecting drain from St. Charles street, in the town of St. Johns, to a point about 500 feet below Langelier's bridge, and a syphon culvert under the Chambly Canal at the latter point, was granted to Messrs. Napoleon Laporte & Co. The culvert is composed of two arched conduits each 5 x 3 feet, 112 feet long, built of concrete with timber outlet; the drain is of horse-shoe shape, also of concrete and of the following inside dimensions:— $4\frac{1}{2}$  x  $3\frac{1}{2}$  feet for the first 825 yards, and  $3\frac{1}{2}$  x 3 for the rest of the distance, or 450 yards. The walls of the culvert, as well as the platform and roof of it, are 12 inches thick in their thinner part. With regard to the drain its shell is 8 inches thick all round.

At the end of the fiscal year the syphon culvert, the manhole at its upper end, and about 200 yards of the drain has been completed. The work is going on and will be finished this fall.

### ST. OURS LOCK.

The only work of importance done here during the year, was the tearing down and rebuilding of the north abutment of the rolling dam connected with the lock. This abutment, consisting of cut stone masonry, had sunk about 12 inches on a length of some 25 feet. It was completely removed for that length, down to the water surface and rebuilt; good Portland cement being used in the joints.

The lock, lock gates, piers, scows, fences and buildings have been kept in good order throughout the year.

I annex to my report tabular statements showing the highest and lowest water on the mitre sill of the locks at the upper and lower entrances of each canal, as well as statements of fines and damages collected during the fiscal year ended the 30th of June, 1898.

I have the honour to be, sir,

Your obedient servant,

ERNEST MARCEAU,  
*Superintending Engineer.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,  
Deputy Minister and Chief Engineer,  
Railways and Canals.



LACHINE CANAL.

STATEMENT showing the depth of the river water on mitre sills of Old Lock No. 1, at lower entrance, and Lock No. 5, at upper entrance, during the fiscal year ended 30th June, 1898.

MONTHS.	OLD LOCK NO. 1, LOWER SILL.				OLD LOCK NO. 5, UPPER SILL.			
	Highest.		Lowest.		Highest.		Lowest.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1897.								
July.....	18	4	16	10	11	9	10	4
August.....	17	7	16	4	11	4	10	5
September.....	16	7	14	11	10	5	9	4
October.....	15	2	14	2	9	8	8	11
November.....	15	3	14	6	9	11	8	10
December.....	27	5	14	9	11	6	9	5
1898.								
January.....	32	11	27	4	11	8	10	1
February.....	27	10	26	1	11	6	9	6
March.....	40	10	24	7	14	0	9	9
April.....	24	0	18	7	13	2	11	7
May.....	19	7	18	4	12	7	11	11
June.....	19	7	18	0	12	6	11	8

LACHINE CANAL.

STATEMENT showing the depth of the river water on mitre sills of new Lock No. 1, at lower entrance, and new Lock No. 5, at upper entrance, during the fiscal year ended 30th June, 1898.

MONTHS.	NEW LOCK NO. 1, LOWER SILL.				NEW LOCK NO. 5, UPPER SILL.			
	Highest.		Lowest.		Highest.		Lowest.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1897.								
July.....	20	6	19	0	16	9	15	4
August.....	19	9	18	6	16	4	15	5
September.....	18	9	17	1	15	5	14	4
October.....	17	4	16	4	14	8	13	11
November.....	17	5	16	8	14	11	13	10
December.....	29	7	16	11	16	6	14	5
1898.								
January.....	35	1	29	6	16	8	15	1
February.....	30	0	28	3	16	6	14	6
March.....	43	0	26	9	19	0	14	9
April.....	26	2	20	9	18	2	16	7
May.....	21	9	20	6	17	7	16	11
June.....	21	9	20	2	17	6	16	8

Department of Railways and Canals.

BEAUHARNOIS CANAL.

STATEMENT showing the depth of the river water on mitre sills of Lock No. 6, at lower entrance, and Lock No. 14, at upper entrance, during the fiscal year ended 30th June, 1898.

MONTHS.	LOCK NO. 6, LOWER SILL.				LOCK NO. 14, UPPER SILL.			
	Highest.		Lowest.		Highest.		Lowest.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1897.								
July.....	11	4	10	1	11	11	11	4
August.....	11	8	11	2	11	10	11	3
September.....	11	0	9	9	11	4	10	10
October.....	9	8	9	1	11	0	10	4
November.....	9	7	9	4	11	0	10	1
December.....	11	4	9	6	11	6	10	8
1898.								
January.....	15	2	11	0	11	4	10	10
February.....	17	6	13	0	11	8	11	2
March.....	14	6	10	6	12	7	11	3
April.....	13	1	11	6	12	0	11	5
May.....	11	10	11	1	11	11	11	7
June.....	11	8	11	3	12	0	11	6

CHAMBLY CANAL.

STATEMENT showing the depth of the river water on mitre sills of Lock No. 9, at lower entrance, and Lock No. 1, at upper entrance, during the fiscal year ended 30th June, 1898.

MONTHS.	LOCK NO. 9, LOWER SILL.				LOCK NO. 1, UPPER SILL.			
	Highest.		Lowest.		Highest.		Lowest.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1897.								
July.....	14	7	12	7	10	7	9	6
August.....	14	0	12	1	10	4	9	4
September.....	12	0	9	10	9	4	8	0
October.....	10	0	8	5	8	10	7	4
November.....	11	11	8	4	9	0	7	5
December.....	15	0	10	7	9	10	8	7
1898.								
January.....	13	9	12	3	9	8	9	0
February.....	14	9	12	5	9	8	9	2
March.....	23	10	14	4	12	7	9	5
April.....	18	8	14	2	12	2	10	6
May.....	14	2	12	3	10	9	9	7
June.....	12	4	10	10	9	7	8	10

ST. OURS LOCK.

STATEMENT showing the depth of the river water on mitre sills of St. Ours Lock, during the fiscal year ended 30th June, 1898.

MONTHS.	LOCK NO. 1, LOWER SILL.				LOCK NO. 1, UPPER SILL.			
	Highest.		Lowest.		Highest.		Lowest.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1897.								
July .....	12	7	10	5	11	4	10	4
August .....	11	4	9	4	11	1	10	1
September .....	9	9	7	4	10	0	8	8
October .....	7	8	6	3	8	11	8	1
November .....	9	3	6	10	9	11	8	1
December .....	13	6	9	0	11	6	9	0
1898.								
January .....	12	11	11	3	10	5	9	3
February .....	13	10	11	4	10	6	8	11
March .....	22	10	13	2	18	8	12	0
April .....	20	7	13	1	16	3	11	2
May .....	13	3	11	9	11	5	10	5
June .....	12	4	10	3	10	4	9	4

STE. ANNE'S LOCK.

STATEMENT showing the depth of the river water on mitre sills of Ste. Anne's Lock during the fiscal year ended 30th June, 1898.

MONTHS.	LOCK NO. 1, LOWER SILL.				LOCK NO. 1, UPPER SILL.			
	Highest.		Lowest.		Highest.		Lowest.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1897.								
July .....	11	9	10	8	13	7	11	9
August .....	11	1	10	4	11	11	11	6
September .....	10	4	9	5	11	7	10	6
October .....	9	6	9	0	10	10	10	1
November .....	9	7	9	1	11	1	10	10
December .....	12	0	9	5	12	2	10	8
1898.								
January .....	11	10	10	4	11	7	10	10
February .....	11	4	10	2	11	8	10	6
March .....	14	9	10	2	15	11	10	7
April .....	13	0	11	8	15	0	13	4
May .....	12	7	11	10	14	7	13	4
June .....	12	7	11	7	14	7	12	10



# Department of Railways and Canals.

## CARILLON CANAL.

STATEMENT showing the depth of river water on the mitre sills of Locks Nos. 1 and 2, Carillon Canal, during the fiscal year ended 30th June, 1898.

MONTHS.	LOCK NO. 1, LOWER SILL.		LOCK NO. 2, UPPER SILL.	
	Highest.	Lowest.	Highest.	Lowest.
1897.	Ft. In.	Ft. In.	Ft. In.	Ft. In.
July .....	15 1	13 0	15 10	13 2
August .....	13 2	12 9	13 2	12 5
September .....	13 0	11 4	12 7	11 5
October .....	12 2	11 3	11 9	11 3
November .....	12 4	12 0	12 1	11 9
December .....	13 9	12 2	16 9	12 0
1898.				
January .....	13 3	12 6	15 3	13 2
February .....	13 11	12 3	13 2	12 5
March .....	18 6	12 2	16 4	12 5
April .....	16 7	14 11	16 11	15 1
May .....	16 3	15 0	16 11	15 0
June .....	16 0	14 5	16 10	14 2

## GRENVILLE CANAL.

STATEMENT showing the depth of the river water on mitre sills of Locks Nos. 3 and 7, Grenville Canal, during the fiscal year ended 30th June, 1898.

MONTHS.	LOCK NO. 3, LOWER SILL.		LOCK NO. 7, UPPER SILL.	
	Highest.	Lowest.	Highest.	Lowest.
1897.	Ft. In.	Ft. In.	Ft. In.	Ft. In.
July .....	18 4	15 1	16 0	12 11
August .....	15 5	14 9	13 2	12 2
September .....	14 11	13 2	12 7	10 9
October .....	14 0	12 9	11 8	10 4
November .....	14 3	13 6	12 2	11 9
December .....	19 6	13 2	13 6	11 11
1898.				
January .....	26 0	16 10	12 11	12 1
February .....	22 0	18 0	12 2	11 10
March .....	23 7	15 8	18 8	11 10
April .....	20 9	18 7	18 0	15 6
May .....	20 8	18 8	18 0	16 2
June .....	20 7	17 7	18 0	15 2

LACHINE CANAL.

STATEMENT of Fines and Damages collected during the Fiscal Year ended 30th June, 1898.

Date.	Name of Vessel.	Name of Owners.	Fines.	Damages.	Total.
1897.			\$ cts.	\$ cts.	\$ cts.
Nov. 9...	Steamer "Welshman".....	F. G. Hall.....	5 00	.....	5 00
1898.					
May 28..	Steamer "John J. Hill"....	J. Andrews.....	...	6 00	6 00
June 20..	" "Emma Munsen"...	The Sincennes-McNaughton Line.....	20 60	.....	20 00
" 20..	" "Azilda".....	" "	20 00	.....	20 00
" 25..	" "Tim Doyle".....	Is. Clement.....	20 00	.....	20 00
" 27..	" "Alexandria".....	E. B. Smith.....	20 00	.....	20 00
Total.....			85 00	6 00	91 00

JOHN O'NEILL,  
*Collector of Canal Revenue.*

CHAMBLY CANAL.

STATEMENT of Fines and Damages collected during the Fiscal Year ended 30th June, 1898.

Date.	Name of Vessel.	Name of Owners.	Fines.	Damages.	Totals.
1897.			\$ cts.	\$ cts.	\$ cts.
Sept. 14..	"Kate Harney".....	P. Harney.....	None.	5 00	5 00
Totals... ..			None.	5 00	5 00

M. D. S. MARTEL,  
*Collector of Canal Revenue.*

# Department of Railways and Canals.

## TRENT CANAL

SUPERINTENDING ENGINEER'S OFFICE,  
PETERBOROUGH, 31st July, 1898.

DEAR SIR,—I have the honour to submit herewith the annual report on the works under my charge for the fiscal year ending 30th June, 1898.

The Trent Canal is a term applied to the several water stretches lying for the greater part along the valley of the Trent, between the Bay of Quinté, on Lake Ontario, and Georgian Bay, on Lake Huron, which however in their present condition do not form a continuous line of navigation. The object of the present works is to connect these several water stretches so as to make a continuous line of navigation. A glance at a map of the district will show how comparatively small the length of water-way to make or improve is to the length already provided by nature in the way of its beautiful and deep lakes and rivers. The total distance between Lake Ontario and Lake Huron is about 200 miles. By utilizing the numerous lakes and rivers, and taking advantage of the lay of the land to make flooded reaches it is hoped that not more than 15 or 20 miles of the total length will be actual canal. The Imperial Government as far back as the year 1835 chose this route as being the most natural and feasible to make a water communication between Lake Ontario and Lake Huron, and they spent considerable sums in carrying out this project, and in fact a sufficient sum of money was voted by the Government at that time to construct that part of the work lying between Lake Ontario and Balsam Lake. The works then constructed have ever since been used for local traffic. When the two divisions at present under construction are completed a continuous line of navigation between Heely's Falls and the ports on Lake Simcoe, a distance of about 160 miles, will then be available. Though a draught of six feet is provided on all the stills the lands necessary to flood for a draught of eight feet has been purchased on the new sections at present under construction, so that if required a draught of eight feet could be provided at a comparatively little extra cost.

### MAINTENANCE.

Navigation closed on the upper reach 20th November, 1897, and opened 7th April, 1898. On the lower reach navigation closed 24th November, 1897, and opened again 7th April, 1898.

The height of water on the mitre sills of the locks was very fair throughout the season though there is still room for much improvement in regard to the regulation of the water on the different reaches. The regulation of the water is under three different managements, namely, the Dominion Government, the Ontario Government and the lumbermen, consequently it is not surprising that there are complaints regarding the management of the water during the dry season. Owing to the immense country drained, and the country becoming every year more cleared, the proper regulation of the water becomes more difficult. The regulation of the water also between Peterborough is, under the present circumstances, very unsatisfactory. Owing to the mills at Lakefield using all the surplus water, during the low stages of the water, any temporary stoppage of the mills almost stops the entire flow, in consequence of which the mills below are often stopped for a time. If the mill-owners at Lakefield were compelled to notify the caretaker of the dam at Lakefield when it was necessary to stop temporarily for repairs the cause of complaint would be removed.

The total number of lockages for the season was 4,035, being an increase of over 35 per cent over those of last year, though this does not fairly represent the traffic on the canal, as owing to many of the longer routes of the steamers not passing



through a lock no record of the traffic is kept. There are about 20 steamers on the reach between Lakefield and Balsam Lake and seven on the reach between Peterborough and Heely's Falls, and several on Lake Simcoe.

#### REPAIRS.

The following repairs were executed:—

##### *Chisholms.*

The dam at this station is in a bad condition and a new dam should be built. Minor repairs were made to it to retain it in position as long as possible. The lock and canal are in good state of repair.

##### *Heely's Falls.*

The dam at this place is in a good state of repair. Some repairs were made to the slide and some new stoplogs were provided.

##### *Hastings.*

The swing bridge was painted. A new pair of stoplog winches were provided as the ones in use were too light for the work. New planking was put down in the sluiceways where required.

##### *Peterborough.*

The leakage through the bulkheads of the two east sluices of the dam were staunched and a stoplog brace was placed in the east sluice. Some new stringers and corbels were put in below the platforms of the sluices and four new stoplogs were provided. The lock gates and lock office and storehouse were painted.

##### *Otonabee River.*

New buoys were placed in the river between Rice Lake and Peterborough and the river was snagged.

##### *Lakefield.*

The wharf was filled with stone from the canal excavation. The dam was replanked and a leakage through the flooring of the south sluice was staunched.

##### *Young's Point.*

A heavy pair of stoplog winches were substituted for the ones in use. Four new stoplogs were provided.

##### *Burleigh Falls.*

The platform of the dam was repaired and three new stoplogs were provided.

##### *Lovesick.*

The planking of the platform was renewed throughout and a new slide for the passage of canoes was built at the west end of the dam.

##### *Buckhorn.*

Two new piers were built on the down stream end of the sluice piers at the north end of the dam in order to strengthen them. The leakage about the flume piers was also staunched.

## Department of Railways and Canals.

### *Bobcaygeon.*

A pier was built at the lower entrance to the lock and has greatly improved the entrance. The floor of the lock was also repaired. The shoal which had formed at the lower entrance was dredged out. The dam and dyke were also gravelled.

### *Fenelon Falls.*

The lock gates and lock office were painted and snubbing posts were placed along the canal from the lock to the western entrance.

### INCOME.

### *Burleigh Falls.*

A new channel was blasted and dredged at the narrow cut above Burleigh. This cut was not quite finished, but it will be completed when the water can be lowered after the close of navigation this fall. When this channel is finished it will greatly improve the alignment of the navigation channel.

### *Katchawannoe Lake.*

The shoals at "Henderson's Narrows" and below the "Three Islands" and the "Narrows" at Lakefield were removed by dredging. The bottom in front of the wharf was also dredged out to navigation depth.

### *Bobcaygeon.*

The upper entrance to the canal was greatly improved by widening and deepening the channel. A facework of timber was constructed along the whole of the south side, so that now this is as fine an entrance as any along the route.

### CAPITAL.

### *Rosedale.*

The work of blasting and dredging a channel 4,600 feet in length and 90 feet wide, so as to give 7 feet depth of water, was completed after working steadily for two years. A fine channel has now been obtained, and the traffic has already very much increased, though it is impossible for the larger vessels to get up this far owing to the small size of the lock below which is under the control of the Ontario Government.

The contract for the construction of the abutments and pivot pier for a swing bridge at the highway crossing at Rosedale was awarded to David Conroy and was satisfactorily carried out by him. The contract for the steel superstructure for this swing bridge was awarded to the Central Bridge Works, of Peterborough, and was satisfactorily erected by them.

### CONSTRUCTION.

### *Section No. 1, Simcoe-Balsam Lake Division.*

The contract for this section was awarded to Andrew Onderdonk on April 22nd, 1895.

Work on this section has been going on very slowly, only a small force of men being employed at any time during the season. The work comprised under the contract is nearly completed. The following work remains to be done: The placing of the concrete piers at the entrance of Balsam Lake, the removal of the rock between the entrance piers and at the end of the canal, the construction of the



guard piers at Victoria Road bridge, the cleaning up of the canal prism between Victoria Road and Portage Road, the finishing of the Grand Trunk Railway diversion at Kirkfield and the removal of the rock below the present track, the construction of two guard gates and the building of a dam on Grass River.

The work on the concrete piers has been much delayed on account of the water in Balsam Lake, which is controlled by the Ontario Government, being held so high.

*Section No. 1, Peterborough-Lakefield Division.*

The contract for this section was awarded to Messrs. Brown, Love & Aylmer on August 19th, 1895.

Work has been going on continuously, though not a very large force has been employed. The work on this section is pretty well advanced, and could if required be completed by the opening of navigation next season. The masonry of all the locks, except No. 1 at Lakefield, has been completed. The dams at Nos. 3 and 4 are completed and that at No. 5 nearly completed. About all the cribwork for the entrance piers of the locks is about completed and the concrete piers have been placed on most of them. The lock gates for Nos. 5, 4 and 3 locks are constructed; the gates for No. 4 have been placed in position with the opening apparatus complete. The opening apparatus is after a new model and has been found to work most satisfactorily. The highway bridge across the river at Lakefield was raised six feet in order to ease the grades leading to the high level bridge across the canal. The contract for the raising of the masonry bridge piers was awarded to John Hayes and was satisfactorily completed. The high level bridge across the canal at Lakefield has been constructed, and as the approaches, ramps and retaining walls are completed the many objections which at first were raised by some gradually vanished.

There yet remains to be done the excavation at the upper and lower entrances of No. 1 and the entrance piers for the same, the construction of No. 1 lock, the removal of the rock in the bottom of the river below No. 1 lock, the construction of the dam at No. 2, the raising of the Grand Trunk Railway track near No. 2 lock, the completion of the earth excavation at No. 3, the completion of No. 5 dam, the hanging of the gates for Nos. 5, 3 and 2, and the completion of the concrete entrance piers at Nos. 2, 3, 4 and 5.

*Section No. 2, Peterborough-Lakefield Division.*

The contract for the work on this section was awarded to Messrs. Corry & Laverdure on May 21st, 1896. About all the excavation on this section has been done with the exception of that for No. 6 lock and the hydraulic lock and the prism of the canal from station 160 to station 170. No work has been done at the hydraulic lock up to the close of the fiscal year though it is a season's work to do it. This work ought to have been completed before the 30th June in order that the concrete might have been put in this season. The contractors spent a great deal of time with the entrance piers at Little Lake and had not completed them by the 30th of June.

The following structures have been completed: the highway swing bridges at Maria Street, Ashburnham, Warsaw Road and Nassau; the Grand Trunk Railway swing bridge at Nassau, and Canadian Pacific Railway swing bridge at Ashburnham; the highway high level bridge at the Norwood Road and the guard gate at Nassau. Work at Nassau dam was about stopped at Christmas after the cofferdam piers had been constructed. In consequence of the piers remaining so long they were gradually undermined by the strong current and became unsafe for the purposes of a cofferdam. This caused great delay on this work, and it was not till after the water had reached its normal condition in the spring that the work could be gone on with again. The work yet remaining to be done is the excavation at the hydraulic lock and lock No. 6, the excavation of the prism of the canal from station 160 to station 170, two guard gates, the masonry and lock gates for lock No. 6 and entrance piers, the completion of the dam at Nassau and entrance piers at the Canadian Pacific Railway swing bridge.



## Department of Railways and Canals.

### *Hydraulic Lock.*

Tenders were called for the superstructure of this lock, and the contract was awarded to the Dominion Bridge Company, of Lachine. The date of completion of the work is May 1st, 1900. The work of preparing the detail working drawings is being satisfactorily proceeded with, and as soon as those are approved of the iron work will be proceeded with.

### PLANT.

The dredge "Otonabee" with two dump scows and two drill scows have been continually employed at Rosedale, Bobcaygeon, Burleigh and Katchawannoe Lake till the end of the fiscal year.

A stone lifter was also constructed on derrick scow and did splendid work in removing the blasted rock and boulders.

### *Tug "Empire."*

The tug "Empire" has been fully employed throughout the year in attending the dredge, buoying out the navigation channel, delivering timber to the several works in progress, hauling gravel for staunching dams, &c.

I have the honour to be, sir,

Your obedient servant,

RICH'D. B. ROGERS,

*Superintending Engineer.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,

Deputy Minister and Chief Engineer

Railways and Canals.

STATEMENT showing the highest and lowest Water Level at each Lock on the Trent Canal for the fiscal year ended 30th June, 1898.

Station.	1897.											
	July.		August.		September.		October.		November.		December.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
Hastings.....	7 5	7 0	7 5	7 1	7 5	7 0	7 2	6 8	7 4	6 11	7 10	6 11
Peterborough.....	7 11	6 9	8 4	7 1	8 0	7 1	7 9	7 1	7 11	6 9	8 9	7 5
Lakefield.....	6 1	5 4	6 0	5 7	6 3	5 2	6 0	4 1	6 2	5 6	7 0	6 2
Young's Point.....	7 8	6 9	7 6	6 7	7 0	5 5	5 7	5 0	6 4	5 2	8 5	6 4
Burleigh Falls.....	5 11	4 4	5 11	5 4	6 0	4 10	4 9	4 4	5 4	5 0	5 2	4 11
Lovesick.....	6 10	5 5	7 0	6 7	7 0	5 3	6 2	5 2	6 3	5 2	6 10	5 8
Buckhorn.....	6 7	6 4	7 1	6 8	6 11	6 3	6 3	5 5	5 7	5 3	7 2	6 6
Bobcaygeon.....	7 2	6 10	7 3	6 8	7 1	6 8	7 2	6 5	7 1	6 9	7 2	6 6
Fenelon Falls.....	6 9	5 8	6 8	6 1	6 3	5 8	6 5	5 4	6 0	5 11	6 4	5 4

Station.	1898.											
	January.		February.		March.		April.		May.		June.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
Hastings.....	7 9	7 2	7 4	7 0	9 0	7 2	9 0	7 9	7 8	7 0	7 3	6 11
Peterborough.....	8 10	6 1	6 2	5 11	9 4	6 4	9 4	7 8	7 11	6 3	7 4	6 3
Lakefield.....	6 4	5 10	6 3	5 10	8 8	6 1	8 9	5 8	5 10	5 4	6 1	5 3
Young's Point.....	8 0	6 3	6 7	6 0	9 6	6 7	9 6	6 4	6 9	6 2	7 1	6 4
Burleigh Falls.....	5 1	3 4	3 5	3 1	5 9	5 5	5 9	5 1	6 4	5 9	6 3	5 5
Lovesick.....	7 2	6 6	5 8	5 8	8 10	8 2	8 3	6 10	7 1	6 5	6 11	5 8
Buckhorn.....	6 7	5 10	5 10	5 7	8 6	5 6	8 5	6 7	6 8	6 7	6 10	6 7
Bobcaygeon.....	6 7	6 3	6 10	6 6	7 3	6 5	7 4	7 0	7 4	6 11	7 2	6 11
Fenelon Falls.....	5 9	5 7	5 11	5 6	7 6	6 0	7 0	5 9	6 6	5 9	6 4	5 1

RICHD. B. ROGERS,  
*Superintending Engineer.*

# Department of Railways and Canals.

## RIDEAU CANAL.

SUPERINTENDING ENGINEER'S OFFICE,  
OTTAWA, 1st July, 1898.

SIR,—I have the honour to submit my annual report on the work performed on the Rideau Canal, under my charge, during the fiscal year ending 30th June, 1898.

Navigation closed at Ottawa, 25th November, 1897.

do Kingston Mills, 23rd November, 1898. 7

Navigation opened at Ottawa, 1st May, 1898.

do Kingston Mills, 1st May, 1898.

The depth of water maintained during the whole season of navigation throughout the canal on all the ascending and descending levels was particularly good; better in fact than for many years past.

The spring freshet this year was of short duration, but of great violence, due to the rapidity with which the snow melted.

I am glad, however, to be able to report that the spring water, ice, &c., was safely passed through the various waste weirs, the damage done being hardly worth mentioning.

The principal works and repairs performed at the various lock stations and bridges along the line of navigation are as follows:—

### OTTAWA.

The masonry sill of lock No. 4 was rebuilt by our own masons, the stone having been supplied and cut last year. Two lock piers were thoroughly grouted from bottom to top. Four new man-hole gratings, and three new chain blocks were put in. An additional foot-board was built on to the swing bars of lock No. 5. The roadway round the wharfs in the canal basin was raised, graded and macadamized, making a dry permanent road in all kinds of weather, where formerly in wet weather, loaded wagons were unable to go. A great number of loose boulders were removed from the basin and carted clear of the canal lands.

### STEWARTON BRIDGE.

The whole bridge was covered with 2-inch plank over the old planking. The swing span was raised, and a new circle, and several small castings supplied for the turntable.

### BANK STREET BRIDGE.

The old wooden swing bridge was pulled down last winter, together with the old cribwork piers and rests, and a substantial steel span on masonry substituted therefor.

The approaches which were originally 20 feet wide, were raised, graded and widened out to 36 feet; and the new bridge was built 24 feet wide over all as against 12 feet, the width of the old one.

The work was done by contract with the Weddell Bridge Co. of Trenton for the steel superstructure, and by contract with Mr. Thomas McLaughlin of Ottawa for the piers and approaches.

The bridge-tender's cottage was painted inside and out and new shutters purchased.



## HARTWELL'S LOCKS.

The wing walls and chamber of the upper lock were grouted. One pair of sluice frames renewed, and four new chain blocks set in place.

The stone foundation of the lock house was repaired and the entrance into the cellar enlarged.

## HOGSBACK LOCKS.

The old bulkhead was taken down and rebuilt by our own carpenters. Two pairs of sluice frames were renewed and five chain blocks framed. The quarry at this station was reopened for the purpose of taking out the stone required for rebuilding two lock sills at Long Island. Tenders were invited for this stone; but as no quarry owners would tender, there was no alternative but to reopen our own quarry.

This work although involving a considerable outlay was done as economically as possible, the stripping and quarry waste being used to raise and widen the road leading to the bulkhead, a much needed improvement, and as the quarry now stands we have enough fine limestone stripped to supply the requirements of the canal for a considerable length of time. The towpath road from the locks to a point about half a mile towards Hartwell's Locks was graded and raised in the centre.

## BLACK RAPIDS LOCK.

The lower gates of the lock were rebuilt. Six new chain blocks supplied, and the embankments and waste weirs repaired.

## LONG ISLAND LOCKS.

Stone for two mitre sills for this station was quarried and cut at Hogsback quarry and delivered here. Sill No. 3 was built, but the early freshet this year flooded the masons out of the upper lock, so I decided to reinforce the upper sill and put it in immediately after navigation closes this year. About 80 feet of close sheet piling 10" x 12" x 24' was driven above the bulkhead to stop the leakage through the clay under the apron. The timber was supplied by contract with Mr. Francis Hardy of Limebank, and the work was done with our own pile driver by day labour. The cofferdam above the White Horse Shoal was repaired; but as the water in the river was so high last winter, it was found to be impossible to take out the rock, as being full of seams the cofferdam would not unwater it. This work therefore has been for the present left over. The repairing of the permanent cofferdam, however lowered the water sufficiently for extensive repairs to be made in the upper lock sill, and the retaining dam, so that the leakage being in a great measure stopped, the shoal at the White Horse may not require to be removed.

## MANOTICK SWING BRIDGE.

The whole bridge was replanked with white pine plank.

## BURRITT'S RAPIDS LOCK.

Lower lock gates rebuilt. One of the upper wing walls of the lock was taken down five courses deep and rebuilt, the work being done by contract with Mr. Percival of Burritts Rapids. The bridge tender's house was reshingled, and a frame addition built thereto. The walls were also pointed and repaired.

## NICHOLSONS LOCKS.

Two new swing beams placed on gates. Store house sheeted inside with T. and G. lumber and sundry small repairs to station.

## Department of Railways and Canals.

### CLOWE'S LOCK.

New stop logs purchased for waste weir, and sundry small repairs to station.

### MERRICKVILLE LOCKS.

One new swing beam placed on gate. Two stone lock sills sheet piled, pointed and grouted. Both basins were also pointed and grouted.

### KILMARNOCK LOCK.

Sundry small repairs to station. Repairs were made last month to the back dam, which is damaged every year by unknown persons, who when fishing in the vicinity break open channels in the dam to draw up their boats to the upper level. As this dam is two miles away from the lock, in the drowned lands it is impossible to detect the offenders unless a special watchman is employed. The effect of this breaching of the dam is to lower the upper level so that boats strike very heavily in the rock cut above the locks. I think the best way would be to have this cut blasted out about 2 feet deeper all through. This would cost about \$5,000 to do ; but would be of permanent benefit to boats navigating the canal.

### EDMOND'S LOCK.

Sundry small repairs to lock house and station generally.

### OLD SLY'S LOCKS.

Considerable pointing and grouting was done at this station this spring, and the masonry is much tighter than it has been for years. Timber was purchased for rebuilding the bulkhead, and sundry small repairs made to the station.

### SMITH'S FALLS COMBINED LOCK.

The lockmaster's house was repaired, and the by-wash bridge was replanked. Sundry small repairs were made to the basin, and station generally.

### SMITH'S FALLS DETACHED LOCK.

Repairs were made to the embankment and to the station generally. Storm sash were purchased for the lockmaster's house.

### POONAMALIE LOCK.

Sundry small repairs made to the dam, embankments and to the station generally.

### PERTH BRANCH.

The old wooden swing bridge across the canal above the lower lock was taken down and replaced by a new steel swing, the work being done by contract with the Dominion Bridge Company of Montreal. The bridges and wharfs round the basin in Perth were all replanked by the two bridge tenders, the plank having been supplied by contract with Mr. M. Ryan of Smith's Falls.

### OLIVER'S FERRY BRIDGE.

The whole bridge was painted by the bridge tender.



## NARROWS LOCK.

The old swing bridge was removed and a new one built by our own carpenters. The lay by piers above and below the lock were rebuilt from low water line up, the timber being supplied by contract.

## NEWBORO' LOCK.

The bulkhead at the entrance of the cut was concreted below water so that now no leakage comes under the sill when the stop logs are put in. The two beacons at the entrance were rebuilt and painted red and white, and sundry small repairs were made to station.

## CHAFFEY'S LOCK.

The upper sill of the lock was rebuilt and several stones replaced in the chamber and piers of the lock by our own masons. A cofferdam to unwater the work was built by contract with Mr. John Fleming, and very satisfactorily executed.

## DAVIS'S LOCK.

The upper wing walls and piers of the lock were taken down and rebuilt by our own masons, a cofferdam to unwater the work being built by contract with Mr. D. Mahoney. Sundry small repairs made to station.

## JONES'S FALLS LOCKS.

Rebuilt swing bridge across upper lock. Detached lock gates repaired. Several chain blocks supplied and sundry small repairs made to station. As there is no well at this station, two attempts were made by different contractors to sink one through the rock, the conditions of agreement in each case being "no water no pay." I regret to state that both efforts failed owing to the seamy nature of the rock which caused the bit of the drilling machine to drift sideways with the seams. The second attempt made by Mr. Wilson of Athens, Ont., was the most successful of the two, as he drilled a 5-inch hole down for 22 feet by constantly rimming it out, but before water was reached the drill drifted sideways and the hole was lost.

Water is badly needed here, as in addition to the fact the canal officials have nothing but lake water to drink, which in summer time is not fit for consumption, Jones' Falls being a favourite resort for tourists, is always crowded with people, to whom the existence of good drinking water would be a great convenience. I can suggest no way to reach water, except by blasting out a well; and will write a separate report on this subject for your consideration.

## MORTON DAM.

This dam which is three miles distant from Jones' Falls locks, and which is in charge of the lockmaster at that station, was rebuilt below the old dam, which latter was used to unwater the work. The rock on which it was built being full of seams, was concreted thoroughly and upon this foundation the new dam was built. The work has been most efficiently done, the leakage being almost nil, where formerly it flowed through the old dam which was literally nothing more than a pile of stone. A waste weir was built in the new dam with a stoplog bent 20 feet wide, so that we can easily control the freshet in spring time.

## BREWER'S UPPER MILLS LOCKS.

Renewed bulkhead. Lock labourer's house lathed and plastered by contract with Mr. Newlands, of Kingston. Four new flange frames put in sluiceways and sundry small repairs made to station.



## Department of Railways and Canals.

### BRASS'S POINT BRIDGE.

The swing span was raised and repaired and sundry small repairs made to the planking and hand rail, and the bridge painted by the bridge tender.

### BREWER'S LOWER MILLS LOCKS.

Storehouse reshingled. Gravel placed on dam and sundry small repairs made to station.

### KINGSTON MILLS LOCKS.

One pair of locks gates renewed. Waste weir bulkhead and bridge across embankment rebuilt. Storehouse sheeted inside with T. & G. lumber. Four new sluice frames put in sluiceways. Six new chain blocks, and two swing bars placed on lock gates opposite collector's office, and sundry small repairs made to the station and embankments. Several large pieces of dimension stone required for the coping and hollow quoins of the lower lock were taken out of quarry and cut last winter. They are now at Jones's Falls awaiting shipment to Kingston Mills and will be put in place this coming winter.

### GENERAL.

The contract for the supply and delivery of the annual bill of white oak dimension timber has been awarded to Mr. Hebron Harris, of Ottawa. Three hundred barrels of "Dagger" Portland cement were purchased by contract with Francis Hyde & Co., of Montreal.

### DREDGING PLANT.

The dredge "Rideau" commenced work in the lake below Kingston Mills locks, (in which place she wintered) on 1st April. The usual spring repairs to her hull and machinery such as caulking, painting, &c., were made by her own crew, two extra ship carpenters being employed to assist them.

She was employed all last year and up to the present time in dredging the lake between Kingston Mills and the city of Kingston, and will, I hope, finish this work this summer.

Her hull and crane are becoming weak and showing signs of rot, and after next season will require to be entirely rebuilt.

The tug "Shanly" received the same repairs as usual, excepting that in addition to painting and caulking, her engine was taken apart and sent to the shops to be repaired.

Her hull also is not in as good order as could be desired, and will, like the dredge, require, after another season to be entirely rebuilt. She draws a foot too much water for this canal and this continually causes her to strike in shoal water, which has materially shortened the life of her hull.

However, the dredging plant as it stands at present is in good condition for the execution of the work required of them for another year.

I append hereto a table showing the highest and lowest water during each month of the year at Ottawa and Kingston Mills lock stations.

I have the honour to be, sir,

Your obedient servant,

ARTHUR T. PHILLIPS,  
*Superintending Engineer.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,  
Deputy Minister and Chief Engineer  
Railways and Canals.

RIDEAU CANAL.

TABLE showing monthly, the Highest and Lowest Water on the Lower Sills of the Locks at Ottawa and Kingston Mills, respectively, from 1st July, 1897, to 30th June, 1898.

OTTAWA.				KINGSTON MILLS.			
Highest.		Lowest.		Highest.		Lowest.	
	Ft. in.		Ft. in.		Ft. in.		Ft. in.
July 1 .....	14 9	July 31.....	10 4	July 1 to 10....	7 10	July 11 to 31 ..	7 9
Aug. 1 to 5.....	10 4	Aug. 9 to 22....	9 8	Aug. 1 to 4....	7 9	Aug. 28 to 31....	7 6
Sept. 1 .....	9 11	Sept. 30 .....	7 1	Sept. 1 to 8....	7 6	Sept. 30 .....	7 0
Oct. 31 .....	8 9	Oct. 13 to 20....	6 10	Oct. 1 to 3....	7 0	Oct. 30 .....	6 4
Nov. 5 to 8.....	9 0	Nov. 25 to 27....	8 2	Nov. 24 to 30 ..	7 2	Nov. 1.....	6 5
Dec. 19.....	10 10	Dec. 6 to 10....	8 3	Dec. 1.....	7 1	Dec. 23 to 25....	6 4
Jan. 1 .....	8 10	Jan. 27 to 31....	7 11	Jan. 1 to 6. ....	6 6	Jan. 26 to 31....	6 1
Feb. 16 to 21....	9 0	Feb. 1 to 10....	7 11	Feb. 28.....	7 6	Feb. 1.....	6 1
March 19 .....	18 0	March 1 to 6....	8 10	March 29 to 31..	8 0	March 1.....	7 6
April 26 to 30....	16 9	April 15.....	13 5	April 1 to 30....	8 0	April 1 to 30....	8 0
May 31 .....	16 8	May 21 to 23....	14 5	May 7 to 9.....	8 2	May 1.....	8 0

A. T. PHILLIPS,  
*Superintending Engineer.*

RIDEAU CANAL OFFICE,  
OTTAWA, 1st July, 1898.

## Department of Railways and Canals.

### ST. LAWRENCE DISTRICT.

SUPERINTENDING ENGINEER'S OFFICE,  
CORNWALL, 1st July, 1898.

SIR,—I beg to forward a report for the year ending 30th June, 1898, upon new works of construction in connection with the enlargement of the canals in this district.

### CORNWALL CANAL.

(Opened for traffic, 1843.)

The canal has a total lockage of 48 feet and was designed to overcome the Long Sault Rapids, which extend from Dickinson's Landing to Cornwall, a distance of  $11\frac{1}{2}$  miles.

It is located on the north side of the St. Lawrence, on ground sloping rapidly towards the river, and at a considerable elevation (generally about 30 feet) above it.

By closely following the margin of the river, high embankments became necessary, which, when imperfectly constructed (as has been found to have been the case) have under certain conditions been subjected to frequent land slides, accompanied by subsidence, entailing as in 1888, very serious consequences.

The works of enlargement, now under construction, consist in deepening, widening and straightening the original channel, in strengthening and protecting the embankments, and in the construction of new and enlarged locks supply weirs, bridges, &c.

Also, in addition to the above and not included in the original contracts, the construction of dams across the north or Sheik's Island channel, with the necessary regulating weir, &c., on the island, designed to perfect the channel and do away with the existing ruinously and imperfectly constructed embankments west of the village of Mille Roches, embraced in contracts 6 and 7, and part of 5 and 8, which have been abandoned.

This improvement in the alignment was considered necessary, for the reason that the class of vessels for which the enlarged canal is designed, would have great difficulty in navigating it, and that on some of the curves west of Mille Roches it would be practically impossible for those of full canal size to pass each other while under headway.

The enlargement of the lower or eastern entrance (section No. 1) was commenced in 1876, and with the exception of some work on old lock No. 17, and the weir and headrace to the mills, was completed in 1882.

Section No. 10, upper entrance, which was commenced in 1884, was completed in 1895.

In 1888, the remainder of the work required to complete the enlargement was placed under contract, and is practically completed.



And in 1893, the contract for section No. 4 was extended to include the construction of Sheik's Island dams, which are now completed, and the contracts for sections Nos. 6 and 7, and parts of 5 and 8 affected by their construction, cancelled.

Locality.	Section.	Contractors.	Date of Contract.
Cornwall .....	2	Wm. Davis & Sons .....	Nov. 5, 1888.
Lock No. 19 .....	3	" .....	"
Maple Grove .....	4	" .....	"
Sheik's Island Dams .....		" .....	June 19, 1893.
Mille Roches .....	5	The Gilbert Blasting & D. Co. ....	Nov. 2, 1888.
Moulinette .....	6	" .....	"
Sand Bridge .....	7	" .....	"
Long Sault. ....	8	" .....	"
Dickinson's Landing .....	10	Jocks, Delorimier & Broder. ....	April 7, 1884.

NOTE.—Section No. 2 includes the completion of section No. 1. Section No. 4 includes the Sheik's Island dams. Section No. 8 adjoins section No. 10.

These contracts are completed with the exception of some trimming of slopes and bottom, which will be done when the canal is unwatered next spring.

The works done during the year 1897-98 consists in the completion of the banks of the basin between old locks Nos. 16 and 17 and the replacing of the old wooden weir at Mack's mill by a permanent stone structure, also a general overhauling of the stone protection to banks, trimming slopes, repairing gates of old locks Nos. 18, 19 and 20, &c., &c.

The final estimates of sections Nos. 2, 3, and 4 and the Sheik's Island dams are being prepared.

WILLIAMSBURG CANALS.

RAPIDE PLAT CANAL.

(Opened for traffic 1847.)

The lockage of this canal is 11½ feet, it was constructed to overcome the rapids of Rapide Plat and extends from the village of Morrisburg to Flagg's Bay, a distance of 3¾ miles.

The works under contract now completed are as under, viz.:—

Location.	Section.	Contractors.	Date of Contract.
Morrisburg .....	1	Poupore & Fraser .....	January 26, 1891.
Mariatown. ....	2	Weddell Dredging Co. ....	" 12, 1891.
New Road. ....	3	Poupore & Fraser .....	" 26, 1891.

NOTE.—The change in alignment, east of lock No. 24, formerly section No. 4, is included in section No. 3.

## Department of Railways and Canals.

These contracts are completed and the remaining final estimates of section Nos. 1 and 3 are being prepared.

The enlargement was first commenced in 1884 on Section No. 4, at the upper entrance, which included a new guard lock No. 24, this work was completed and brought into use in 1888.

The work of enlargement consisted in deepening and widening the old channel and constructing new locks and supply weirs, &c., &c.

The most important work done during the year 1897-98 consisted in repairing and connecting the old lock No. 23 with the new lock, dredging entrances to both structures, lowering the lower recess and mitre-sill of the old lock 3 feet, and constructing a new supply weir and connecting it with the old lock, also repairing the old wharf, finishing and grading the lock embankments, trimming slopes and completing the protection to banks.

### FARRAN'S POINT CANAL.

(Opened for traffic 1847.)

This canal is about three-quarters of a mile in length and has a lockage of  $3\frac{1}{2}$  feet.

It overcomes a short, swift rapid above the village of Farran's Point, which is situated about 5 miles west of the village of Dickinson's Landing, the head of the Cornwall Canal.

The enlargement of this canal having been authorized, tenders were advertised for on the 9th May, 1897. On the 1st June a contract was entered into with the Canadian Construction Company, the work to be completed 31st January, 1899. The delivery of materials and plant was commenced on the 4th June.

The work commences at Farran's Point, the entrance of the canal, and extends west to Empey's Bay, a distance of about 7,000 feet.

The works contemplated in the proposed scheme of enlargement consist in forming a new lower entrance, north of that at present in use, and beyond the influence of the "Big Eddy" at the foot of the rapid, also of a new lock extending from deep water west to a point about 200 feet above the old lock, and nearly parallel to it, of the deepening and straightening of the present channel to the head of the old canal and its extension through Point Avoyon to Empey's Bay.

The old lock will not be interfered with beyond such necessary repairs as may be required to continue it in use.

Since its commencement in the early part of June, 1897, and keeping pace with the delivery of the necessary plant and materials, the works have been pushed with a view to their completion by the time specified.

During the season of 1897 and up to the time of completion of the cofferdam in January last, many unforeseen difficulties as connected with the lower entrance, were encountered which materially delayed the work. However since the completion of the dam and lock-pit the work has proceeded so rapidly that the completion of the lock this year is practically assured.

At the date of this report the principal work done consists in the completion of the lock-pit, the rapid progress made in the prism excavation, the completion of the extension wall to connect the old with the new lock, the progress made with crib-work in both upper and lower entrances, and the satisfactory progress which is being made with the timber and concrete foundation of the lock, and also with the quarrying and stone cutting, backing, &c.

### GALOPS CANAL.

(Opened for traffic 1847.)

#### IROQUOIS SECTION.

The enlargement of the eastern portion of what is known as the Galops Canal having been authorized, tenders for the Iroquois section were advertised for on the 17th April, 1897. On the 20th May a contract was entered into with Messrs. Larkin & Sangster, the work to be completed 31st January, 1899.



The delivery of materials and plant was commenced on the 17th May.

The contract begins at "Iroquois," the eastern entrance of the canal, and extends westerly to Presqu'Isle, a distance of about 16,000 feet.

By the proposed scheme of enlargement it is designed to raise the normal level of the existing canal 6 feet; that is to the height of the lowest known stage of water in the River St. Lawrence above the guard lock, and thus, on the main line of navigation, dispense with the lift lock No. 26 at Cardinal, which will hereafter be connected directly with the river for the convenience of the village of Cardinal, the mills and the coasting trade.

Since the commencement of the work in May, 1897, a great deal has been accomplished in the way of preliminary work, ground has been broken throughout the contract and although progress in the lock-pit thus far has been slow, yet the contractors are very sanguine as to their ability to complete the lock this year, and provide a fairly wide 14 ft. channel by the opening of navigation in 1899. As an evidence of their intention to push the work vigorously, masonry was begun in the foundation of the lock on the 27th June, 1897.

At the lower end of the section the prism excavation both earth and rock is well advanced, and also the embankment on the north side throughout, intended to form the new road.

At Presqu'Isle, the upper end of the section, the work has been pushed by the Gilbert Bros., sub-contractors, and there is every indication of the earthwork, both excavation and embankment, being completed this year with the exception of the removal of the old towpath which must be dredged.

#### CARDINAL SECTION.

Tenders for the Cardinal section were advertised for on the 17th of April, 1897. On the 10th of May a contract was entered into with Messrs. Wm. Davis & Sons, the work to be completed 31st January, 1899.

The work was commenced on the 3rd of June, and plant and materials delivered shortly after the contract was awarded.

The contract embraces the old "Junction" and the eastern half of the "Galops" divisions; it commences at Presqu'Isle and extends west through the rear of the village of Cardinal to Gates' Point, the eastern end of the upper entrance contract now under construction, a distance of about 17 000 feet.

The proposed scheme of enlargement contemplates abandoning the use of lock No. 26 on the main line in future and raising the normal level of the existing canal 6 feet above the lowest known stage of the River St. Lawrence at the upper entrance.

Since the commencement of the work in June, 1897, the principal work done has been in the excavation of the "Deep Cut" through the village of Cardinal.

This cut is 5,900 feet long and 68 feet deep at the highest point and contains 1,964,469 cubic yards of material; of which 795,900 cubic yards has been excavated up to 30th June, 1898, leaving a balance of 1,168,569 cubic yards yet to be removed.

The cribwork at either end of the "Deep Cut" designed to support the embankment across "Glasford's" and "Gates'" Bays has been completed.

The work has been vigorously pushed by the contractors from its commencement and the plant employed as large as can be used to advantage.

#### UPPER ENTRANCE, GALOPS CANAL.

The works now under contract and in progress and for which Messrs. Murray & Cleveland are the contractors, were commenced in 1889.

The contract was entered into on the 14th November, 1888, to be completed the 15th June, 1891.

It embraces the construction of a lift lock connecting with the river below the rapid, and of a guard lock and supply weir, and the removal of the old guard lock, &c., also the deepening, widening and straightening of the channel from the upper entrance to Round Bay, a distance of about one mile.



## Department of Railways and Canals.

The masonry of the entrance piers will, it is expected, be finished this year, also the entire removal of the old guard lock, the work will then be practically completed.

### RIVER ST. LAWRENCE.

#### NORTH CHANNEL.

This work having been authorized, tenders were advertised for on the 10th April, 1897. On the 14th May a contract was entered into with Mr. M. A. Cleveland, the work to be completed on the 31st January, 1899.

The work commenced on the 1st June.

The proposed channel has been increased in width to 300 feet, and will be perfectly straight, commencing about one mile west of the upper entrance of the Galops Canal, and is practically an extension of canal navigation for fully three miles west to the deep water in the Prescott reach opposite Johnstown.

In connection with this contract it is proposed to form a dam across the "Gut" channel between "Adams" and "Galops" Islands, by utilizing the rock excavated from the east end of the channel.

The work is progressing very systematically and rapidly, the area of rock to be excavated having been inclosed and unwatered, thus enabling the excavation to be done in the "dry," this will practically ensure the completion of a 14 ft. channel by the opening of navigation.

The plant used, viz., two cableways, remove from the cutting an average quantity of 1,000 cubic yards per day and will continue work throughout the winter of 1898-99.

### RIVER REACHES.

#### IMPROVEMENT OF CHANNEL, LAKE ST. FRANCIS.

##### *St. Régis Section, 2½ miles east of Cornwall.*

This work situated at the foot of Cornwall Island and nearly midway between it and the "First Crab," commences near the western entrance to the lateral channel over the St. Régis bar which connects the existing north and south navigable channels.

The contract was entered into with Messrs. Manning & Macdonald, 24th May, 1898, to be completed 30th November, 1898.

Work was commenced in June and is in progress.

##### *Hamilton's Island Section, 10½ miles east of Cornwall.*

This section comprises the undermentioned shoals which obstruct the fairway between the 10th and 11th miles east of Hamilton's Island Light, viz.:—

	Miles.
The Middle Ground.....	10
The Highlander shoal .....	10½
The Horseback.....	11

The contract was entered into with Messrs. Manning & Macdonald, 24th May, 1898, to be completed 30th November, 1898.

Work was commenced in June and is in progress.

#### GALOPS RAPID IMPROVEMENT.

The Galops Rapid improvements consist in the formation, by subaqueous excavation, of a straight channel 200 feet wide and 17 feet deep, through the shoals termed respectively, Upper Bar, North and Caledonia Shoals, Island Shoal and Lower Bar, the whole of which are included in a distance of 3,300 feet.

The work was completed in November, 1888.

The work now in progress is for the purpose of making "a satisfactory test and survey of the bottom of the said channel and at the same time to be prepared for the removal of any material above the original or contract grade, and further in view of the apparent permanent lowering of the water surface of the River St. Lawrence, in said channel, that provision be made for the execution of such additional work as may be considered advisable."

An agreement was entered into with the Gilbert Brothers Engineering Company, Limited, on the 15th September, 1897, to undertake the work as above described.

Operations were commenced 10th November, 1897, and are still in progress.

I have the honour to be, sir,

Your obedient servant,

TOM S. RUBIDGE,

*Superintending Engineer.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,

Deputy Minister and Chief Engineer Railways and Canals,

# Department of Railways and Canals.

## ST. LAWRENCE DISTRICT.

SUPERINTENDING ENGINEER'S OFFICE,  
CORNWALL, 1st July, 1898.

SIR,—I have the honour to report on the maintenance of the canals under my charge during the fiscal year ending the 30th June, 1898.

The St. Lawrence district includes the Cornwall, Farran's Point, Rapide Plat and Galops Canals; the Murray Canal and the improvements on the rapids and channels of the navigable reaches of the River St. Lawrence and Lake St. Francis.

### CORNWALL CANAL.

General navigation for the season of 1897 closed on the 8th December.

Water was drawn off this canal on the 4th April, 1898, for the purpose of repairs and construction and remained unwatered until opened for traffic on the 23rd April.

The new and old locks at the lower entrance were dismantled and secured in the usual manner for winter.

Navigation was maintained without accident during the past year.

The water supply to the mills was not interfered with.

The usual winter's works at the shops was carried on and whilst the canal remained unwatered the repairs and renewals to complete the old locks at lower entrance were made, and a permanent stone box culvert built at Sand Creek bridge.

Watch houses were built for locks Nos. 17, 18, 20 and 21.

An old house was removed from lock No. 18 to the workshops and converted into a blacksmith's shop.

The frame of the old house from the town borrow-pit was also removed to the workshops and fitted up as a store house for lumber, ice house, &c.

New foot bridges were placed on all gates of old locks, lower entrance.

One pair of gates rebuilt and fitted with new valves for lock No. 17.

Four pairs of gates changed in lower recesses of new locks Nos. 15 and 17.

The banks, ditches and all structures have been kept in good repair, with the exception of new entrance locks Nos. 15 and 17, for which arrangements have been made to unwater immediately after the 1st July to repair or renew the mitre-sills, recess platforms, &c., &c.

Extensive repairs are required at the lower entrance, to the ice breakers and piers.

Also a new regulating and supply weir at the head race to the lower mills at lock No. 17.

The superannuations during the year 1897-98 are as follows, viz.:—

William Bridges, lock tender, lock No. 19, Order in Council 25th September, 1897.

James Gleason, lock tender, lock No. 19, Order in Council, 8th January, 1898.

William Burrows, collector of tolls, Kingston, Order in Council, 16th April, 1898.

The fines imposed during the year 1897-98 are as follows:—

1897.....	July 2nd.....	Fine .....	Tug "Nellie Reid"....	\$10 00	paid.
do .....	do 31st.....	Damages..	Str. "Algerian".....	50 00	do
do .....	August 11th...	Fine.....	Tug "Myra"....	5 00	do
do .....	do 31st....	Damages...	Barge "Isis".....	5 00	do
do .....	Sept. 5th.....	Fine.....	Barge "Cherokee"....	5 00	do
do .....	Oct. 28th.....	Damages...	Barge "Armand".....	10 00	do
do .....	Nov. 9th.....	Fine.....	Str. "Alexandria"....	5 00	do
do .....	do 9th.....	Damages...	do do	40 00	do
do .....	Oct. 3rd.....	Fine.....	Barge "Englands"....	5 00	do
do .....	do 20th....	Damages...	Str. "Corsican".....	10 50	do
1898.....	April 27th.....	do	do "Hamilton".....	17 10	do
do .....	do 29th.....	do	Barge "Fred Carney"	5 00	do



The highest water recorded during the season of navigation at lock No. 15, lower entrance, was 10 ft. 4 in., and the lowest 8 ft. 7 in.; and the highest water during the season of navigation at lock No. 21, upper entrance, was 10 ft. 2 in., and the lowest 7 ft. 5 in.

The above levels are with reference to the mitre-sills of the old locks Nos. 15 and 21 respectively.

The highest and lowest water during the year ending 30th June, 1898, at locks Nos. 15 and 21 is as under, viz.:—

Lock No. 15, highest, 20 ft. 2 in., March, 1898; lowest, 8 ft. 7 in., November, 1897.

Lock No. 21, highest, 11 ft. 1 in., February, 1898; lowest, 7 ft. 5 in., November, 1897.

### WILLIAMSBURG CANALS.

The several divisions of these canals, viz.: Farran's Point Canal, Rapide Plat Canal, and the Point Iroquois, the Junction, and the old Galops Canal, collectively known as the "Galops Canal," were closed on the 8th December, 1897, and reopened for the season of 1898 on the 23rd April, 1898.

Navigation has been maintained in a fairly satisfactory manner during the past year in view of the extensive works of enlargement and the low stage of the river.

No accidents have occurred during the season of 1897-98, nor has the water supply to the mills been interfered with, except at Morrisburg, where, owing to extensive construction operations in connection with the new weir and the lowering of the mitre-sill of lock No. 23, &c., the mills were closed down from the commencement of the season until October, 1897.

An ice jam occurred near Aultsville, above the Farran's Point Canal, on the 1st of February, 1898, which held until the 16th March, raising and backing the water to the foot of Rapide Plat.

The repairs staff has been principally occupied in maintaining the old locks in working order, a difficult task requiring constant attention, owing to their almost constant use by the contractors for the enlargement. The banks receiving only such necessary and temporary repairs as seemed to be required to ensure their safety until the completion of the new works.

During the winter general repairs were made to the buoy boat, scows, &c., and spare buoys prepared and ironed.

Two pairs of old gates were rebuilt for locks Nos. 25 and 26, and the Iroquois bridge generally overhauled and repaired.

The buoy service from Cornwall to Prescott was duly performed at the close of the season in December, 1897, and in time for the opening of navigation in April, 1898.

The lowest water on the mitre-sill of old lock No. 23, the governing point on the canals in this district, during the season of navigation was 4 ft. 9 in. in November, 1897.

The lowest water on the mitre-sill of old guard lock No. 27 during navigation was 6 ft. 8 in., and the highest 10 ft.

No fines were imposed during the year 1897-98.

### MURRAY CANAL.

The canal was closed for navigation on the 3rd December, 1897, and reopened on the 30th March, 1898.

The number of vessels passed through the canal from 1st July, 1897, to 30th June, 1898, was 687.

No accidents have occurred, nor fines imposed during the year 1897-98.

Extensive repairs were made to 9,000 lin. ft. of rip-rap protection; and over 2,000 lin. ft. of the tow-path was graded, and surfaced with gravel.

## Department of Railways and Canals.

The swing bridges have been overhauled, thoroughly repaired and painted.

The banks and ditches have been maintained in good condition.

New back ditches were formed on the north side of canal between the Smithfield and Brighton highway bridges, also proper under drains from the tow-path ditches.

A large quantity of stone has been broken for protecting banks.

All buildings have been repaired and painted.

The stone scow has also been repaired, painted and caulked.

The highest water recorded during the season of navigation, 1897-98, was 13 ft. 6 in., and the lowest 11 ft. 2 in.

It is intended to provide a landing stage at the collector's office; also to substitute efficient lights at both entrances, for those now in use.

I append a statement showing the highest and lowest water during the past year on each of the canals in my district, also a condensed statement of the highest and lowest water during the season of navigation from the year 1891 to 1897, both inclusive.

I have the honour to be, sir,

Your obedient servant,

TOM. S. RUBIDGE,

*Superintending Engineer.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.,

Duputy Minister and Chief Engineer,  
Railways and Canals.

STATEMENT of the Highest and Lowest Water on the Canals in the St. Lawrence District, for the Year ended 30th June, 1898.

CORNWALL CANAL.										WILLIAMSBURG CANALS.										LAKE ONTARIO.											
Lock 15.			Lock 21.			Lock 22.			Lock 23.			Lock 24.			Lock 25.			Lock 27.			Murray Canal.										
High.	Low.		High.	Low.		High.	Low.		High.	Low.		High.	Low.		High.	Low.		High.	Low.		High.	Low.									
Ft. in.	Ft. in.		Ft. in.	Ft. in.		Ft. in.	Ft. in.		Ft. in.	Ft. in.		Ft. in.	Ft. in.		Ft. in.	Ft. in.		Ft. in.	Ft. in.		Ft. in.	Ft. in.									
1897.																															
10	2	9	9	9	9	2	9	2	8	3	9	0	8	0	9	3	8	0	11	8	10	6	9	1	13	5	12	10			
10	3	9	8	9	10	9	1	9	4	8	6	8	10	8	0	9	0	8	1	11	5	10	5	9	0	13	0	12	6		
9	8	9	0	9	5	8	8	8	9	8	0	8	2	7	3	8	4	7	4	10	7	9	7	8	6	12	6	11	9		
9	3	8	9	8	11	8	0	8	5	7	6	7	10	6	3	7	9	6	3	10	2	8	4	9	1	11	11	11	6		
9	3	8	7	9	0	7	5	8	3	6	11	7	7	4	9	7	7	4	8	10	4	6	6	9	5	11	11	11	2		
9	9	8	6	8	11	8	0	8	6	7	5	7	10	6	3	7	9	6	2	10	1	8	3	9	2	7	8	11	11	6	
1898.																															
19	11	9	2	9	2	8	0	8	4	7	0	7	7	6	5	7	8	6	4	9	6	8	7	8	6	12	3	11	7		
19	5	14	0	11	1	8	2	11	5	7	10	12	8	8	3	8	7	6	7	10	3	9	1	8	9	7	4	12	6	12	1
20	2	10	1	10	4	8	11	9	9	8	5	9	0	7	10	9	8	7	7	11	8	9	10	4	8	0	13	2	12	5	
10	3	9	10	9	10	9	5	9	11	8	10	9	0	8	3	9	2	8	3	11	9	10	9	9	7	8	8	13	3	13	0
10	4	10	0	10	1	9	6	9	7	8	8	9	1	8	2	9	5	8	0	11	11	11	3	9	9	9	1	13	6	13	3
10	4	10	0	10	2	9	7	9	7	9	0	9	3	8	7	9	6	8	5	12	0	11	0	10	0	9	0	13	5	13	3



STATEMENT of the Highest and Lowest Water on the Canals in the St. Lawrence District, May to November in each year.

YEAR.	CORNWALL CANAL.						WILLIAMSBURG CANALS.					
	Lock No. 15.			Lock No. 21.			Lock No. 22.			Lock No. 23.		
	Highest.		Lowest.	Highest.		Lowest.	Highest.		Lowest.	Highest.		Lowest.
	Month.	Ft. in.	Month.	Ft. in.	Month.	Ft. in.	Month.	Ft. in.	Month.	Ft. in.	Month.	Ft. in.
1891.....	May.....	11 10	Nov.....	11 11	Nov.....	8 2	May.....	10 11	Nov.....	7 6	May.....	11 1
1892.....	August.....	12 1	May.....	10 10	do.....	8 10	July.....	10 3	do.....	7 10	July.....	9 9
1893.....	May.....	12 5	Nov.....	11 9	do.....	9 0	May.....	11 2	do.....	8 3	May.....	11 1
1894.....	June.....	11 0	do.....	10 11	do.....	8 6	June.....	10 6	do.....	7 10	June.....	10 1
1895.....	May.....	9 10	do.....	9 4	do.....	7 4	May.....	8 9	do.....	5 10	do.....	8 0
1896.....	May.....	10 2½	Oct.....	9 11	do.....	7 8	do.....	9 4	do.....	6 11	do.....	8 11
1897.....	August.....	10 3	Nov.....	10 0	do.....	7 5	do.....	9 10	do.....	7 2	do.....	8 11

STATEMENT of the Highest and Lowest Water on the Canals in the St. Lawrence District, May to November in each year (Continued).

YEAR.	WILLIAMSBURG CANALS (Continued).						LAKE ONTARIO.					
	Lock No. 24.			Lock No. 25.			Lock No. 27.			Murray Canal.		
	Highest.		Lowest.	Highest.		Lowest.	Highest.		Lowest.	Highest.		Lowest.
	Month.	Ft. in.	Month.	Ft. in.	Month.	Ft. in.	Month.	Ft. in.	Month.	Ft. in.	Month.	Ft. in.
1891.....	May.....	12 0	Nov.....	13 11	Nov.....	9 0	May.....	12 0	Nov.....	14 9	Nov.....	11 5½
1892.....	Sept.....	10 0	do.....	12 8	do.....	9 4	July.....	10 3	do.....	13 6	do.....	12 1
1893.....	May.....	11 2	August.....	13 10	do.....	10 0	May.....	11 6	do.....	14 9	do.....	12 2
1894.....	June.....	10 5	Nov.....	13 3	do.....	9 1	July.....	10 9	do.....	14 0	do.....	12 2
1895.....	May.....	8 3	do.....	10 10	do.....	6 8	May.....	9 10	do.....	12 5	do.....	12 4
1896.....	do.....	9 3	do.....	12 0	do.....	8 3	do.....	10 6	do.....	12 10	do.....	11 1
1897.....	July.....	9 3	do.....	11 8	do.....	6 6	June.....	10 0	do.....	13 5	do.....	11 2

WELLAND CANAL.

OFFICE OF SUPERINTENDING ENGINEER,  
ST. CATHARINES, 21st September, 1898.

SIR,—I have the honour to report upon the operation and maintenance of the Welland Canal and its branches for the fiscal year ending 30th June, 1898.

The Welland Canal system comprises the main line of canal from Port Dalhousie on Lake Ontario to Port Colborne on Lake Erie, a distance of twenty-six and three-quarters miles, constructed for fourteen feet of water upon the mitre sills, with the bottoms of the reaches one foot below the mitre sills, the supply being now drawn from Lake Erie direct.

By raising the surface of the water in the reaches above the level originally intended, vessels drawing fourteen feet now pass through the canal, except in comparatively rare instances of short duration, when high winds lower the water in the lakes, and at the entrance locks.

The Old Canal, from Port Dalhousie to a junction with the New Canal at Allanburgh, a distance of twelve and a half miles, with a present available depth of nine feet, and used chiefly for water power for the numerous and varied industries along its banks.

The Welland Canal “Feeder,” from the dam on the Grand River at Dunnville, to the junction with the main line of canal about a mile and a quarter south of the town of Welland, its length being twenty-one miles with an available depth at present of five feet.

The Stromness Branch, from Stromness on the “Feeder” to Port Maitland on Lake Erie at the mouth of the Grand River, a distance of one and three-quarters miles with a present available depth of five feet.

The Chippewa Branch from Port Robinson on the main line of canal to Chippewa, where the Chippewa River enters the Niagara River, a distance of eight and a quarter miles, with an available depth of nine feet at present.

The Welland Canal was originally fed from the Grand River, above the Dunnville dam, which was constructed for that purpose, and the summit level of the main line of canal was maintained at a height of eight feet above the level of Lake Erie, vessels having to lock in and out of the canal at Port Colborne and Port Maitland.

Since the last enlargement of the Welland Canal, when the summit level was deepened to admit of the canal being fed from Lake Erie direct, the Feeder and the works in connection with it as a source of supply have become unnecessary, and are seldom used.

The locks on the main line of canal are 45 feet in width at the level of the lower reach, and 270 feet in length from hollow quoin to hollow quoin, allowing the passage of vessels from 255 to 260 feet in length, according to their beam. The lift of the locks is 12 and 14 feet, the total lift from lake to lake being 326½ feet.

The following are the principal structures on the main line of canal:—

Lift locks .....	25
Guard locks .....	2
Aqueduct .....	1
Highway bridges .....	17
Railway bridges .....	6
Ferries.....	3

During the year there has been no detention worth mentioning at the entrance locks on account of low water, there having been fourteen feet at all times at Port Dalhousie, and but few occasions of short duration at Port Colborne when easterly winds lowered the water below the fourteen foot mark.



## Department of Railways and Canals.

On the 10th of August, 1897, the steamer "Britannic," when passing up the canal, carried away the gates of lock No. 6, which interrupted navigation until August 14th, a mistaken signal between the bridge and engine room being the cause.

A cash deposit of \$7,000 was collected from the owners, to cover the estimated cost of repairing damage, and the vessel proceeded when locking was resumed.

On the 2nd of October, 1897, the gates of lock No. 1, of the Old Canal, were carried away by the steamer "Lakeside" of St. Catharines, when entering the lock from the lake, which necessitated the drawing down of the water in No. 1 level of the New Canal also, when navigation on both canals was interrupted until the 9th of the month. A steam pipe which had parted when crossing the lake prevented the engineer hearing signals.

A cash deposit of \$5,000 was made by the owners to cover the estimated cost of repairing damage, and the vessel resumed her trips between Toronto and Port Dalhousie, until damages were repaired.

The above were the only interruptions of navigation during the year.

Two members of the operative staff were superannuated on account of inability to perform their duties as stated in medical certificates, and two deaths occurred from natural causes, the four vacancies being filled by new appointments.

No lighterages were made at the Port Colborne elevator in the month of June, or to this date, the elevator charges (2 cents per bushel) being prohibitory, when compared with the freights obtainable.

### RENEWALS UNDER INCOME APPROPRIATIONS.

A contract having been entered into with Mr. John Riley for the completion of the concrete superstructure of the east pier at Port Dalhousie, the work of making blocks was commenced as soon as the season permitted.

The existing timber superstructure having been removed in short stretches to a foot below low water level, the concrete blocks 4 x 4 x 6 ft. of Portland cement concrete, were laid to form the two faces of the pier, and the centre was filled with concrete of natural cement. The remaining height of the faces of the pier for 2 ft. 6 in. in width, was made up of Portland cement concrete, deposited in moulds secured to the pier, and the natural cement concrete in the centre was continued to the level of the Portland cement coping.

The length of concrete pier superstructure built by Mr. Riley was 593 lineal feet, exclusive of the rectangular blocks at the lighthouse and range lights, the contract being completed as specified.

At Marlatts bridge (No. 13) the centre range of bridge crib fenders was taken down to sound timber below the usual water line, and the cribwork rebuilt and refilled with stone.

At the Allanburgh bridge (No. 14) a similar renewal was carried out, the bridge floor renewed, and gallows frame repaired. The adjoining bridge over the Old Canal was also refloored, and a new gallows frame put up.

### REPAIRS.

The locks, weirs, bridges, and other structures, have been repaired and repainted when necessary, and have needed considerable repair, as many of them are approaching the stage when the exposed woodwork will have to be renewed.

The ditches have been cleaned out, roads and embankments repaired, and decayed snubbing posts replaced by new ones, all of which work has consumed large quantities of materials, and kept the repair gangs fully employed.

The canal was closed December 14th, 1897, and opened for traffic April 20th, 1898, under pressure from vessel men and to the detriment of the canal works, as sufficient time was not afforded at the proper season for making necessary repairs and renewals.



From the fact that large numbers of vessels were laid up after the first trip, and that freights went down to an exceedingly low figure, it would seem that the early opening was not a benefit to the vessel owners.

Appended will be found a statement of damages to canal property and amounts paid or due for the same, and to whom paid ; also a statement of fines collected from vessels owners or canal employees for breaches of canal rules and regulations.

Also a statement of the highest and lowest recorded depths of water monthly, on the mitre-sills of the new locks at Port Dalhousie and Port Colborne.

I have the honour to be, sir,

Your obedient servant,

W. G. THOMPSON, M. Inst. C.E.,  
*Superintending Engineer.*

COLLINGWOOD SCHREIBER, Esq., C.M.G.  
Deputy Minister and Chief Engineer,  
Railways and Canals,

Department of Railways and Canals.

STATEMENT of Damages to Welland Canal property during the fiscal year ending 30th June, 1898, and amount paid on account of said damages.

Date of Damages.	Name of Vessel.	AMOUNT OF DAMAGES.		Date Paid.	WHERE PAID.
		Paid.	Unpaid.		Collector's Office.
1897.		\$ cts.	\$ cts.	1898.	
May 1....	Steamer J. J. Hill . . . . .	8 49	.....	May 16.....	Port Dalhousie.
				1897.	
" 10 .....	Barge Augustus.....	16 18	.....	July 5....	" "
" 10 .....	Tug Inez.....	14 03	.....	Sept. 21 .....	" "
" 14 .....	Schooner Geo. Farewell..	.....	5 13	.....	.....
July 22.....	Steamer Denver.....	6 02	.....	Aug. 20 .....	" "
" 29.....	" H. R. James.....	94 30	.....	" 26 .....	" Colborne.
				1898.	
Aug. 7.....	" F. D. Ewing....	38 85	.....	May 13 .....	" Dalhousie.
				1897.	
" 10. ....	" Britannic.....	7,000 00	.....	Aug. 13 .....	Deposited on acct.
Sept. 23 .....	" W. A. Haskell.....	53 52	.....	Nov. 24 .....	Port Dalhousie.
Oct. 2 .....	" Lakeside.....	5,000 00	.....	Oct. 9 .....	Deposited on acct.
" 15 .....	" Bannockburn. ....	15 09	.....	Nov. 10.....	Port Dalhousie.
				1898.	
Nov. 6 .....	" Black Rock .....	8 60	.....	May 16.....	" "
1898.					
April 23 .....	" Aragon . . . . .	9 84	.....	June 2.....	" "
" 24 .....	" Hecla .....	.....	4 12	.....	.....
May 1.....	" J. J. Hill .....	20 00	.....	May 16.....	" "
" 4.....	" Iona.....	.....	5 12	.....	.....
" 10.....	Schooner Jno. Martin. . . . .	.....	14 94	.....	.....
" 13.....	Steamer Aragon .....	.....	17 00	.....	.....
" 21 .....	Schooner J. C. Fitzpatrick..	400 00	.....	May 23.....	" Colborne.
June 11.....	Barge Celtic.....	.....	10 25	.....	.....
" 11 .....	Steamer Samoa.....	.....	10 98	.....	.....
" 20.....	" Business .....	.....	9 83	.....	.....
" 23....	Barge Plymouth.....	400 00	.....	June 23.....	" "
		13,084 92	77 37		

STATEMENT of Fines collected from Vessels contravening Canal Rules and Regulations, and from Lock Tenders for neglect of duty, during the fiscal year ending 30th June, 1898.

Date of Fine.	Name of Vessel.	AMOUNT OF FINE.		Date paid.	WHERE PAID.
		Paid.	Unpaid.		Collector's Office.
1897.		\$ cts.	\$ cts.	1897.	
Aug. 11.....	Steamer Iona.....	20 00		Aug. 13.....	Port Colborne.
" 11.....	" Argonaut.....	5 00		Sept. 7.....	" "
" 23.....	Barge Moravia.....	20 00		Aug 30.....	" "
				1898.	
" 26.....	Steamer Queen of the West..	20 00		April 29... ..	" Dalhousie.
				1897.	
" 26.....	" A. L. Hopkins.....	10 00		Aug. 30.....	" Colborne.
Sept. 11.. ..	" Gov. Smith.....	5 00		Sept. 21....	" Dalhousie.
" 11.....	" W. J. Averill.....	5 00		" 21.....	" "
" 11.....	" Cormorant.....	5 00		" 24.....	" "
" 11.....	" Rosemount.....	5 00		" 21.....	" "
" 11.....	" Pickard.....	5 00		" 21.....	" "
" 11.....	" Glengarry.....	5 00		Nov. 10.....	" "
" 11.....	" Arabian.....	5 00		Sept. 14.....	" "
" 11.....	" Lake Michigan.....	5 00		" 14.....	" "
" 11.....	" Escanaba.....		5 00		
" 11.....	Barge T. R. Merritt.....	5 00		Oct. 6.....	" "
1898.					
May 25.....	Steamer Armenia.....	10 00			
June 30.....	Barge Isabel Reed.....		10 00		
1897.	Lock Tenders.				
Oct. 11....	I. Johnston.....	1 50			
" 11....	Jno. Paxton.....	1 50			
" 11....	Saml. Duffin.....	1 50			
" 11....	Jno. Woodall.....	1 50			
" 11.....	Michael White.....	1 50		1897.	
" 11....	Michael Corcoran.....	1 50		Oct. 12.....	St. Catharines.
" 11.....	Con. Gorman.....	1 50			
" 11.....	W. Bowman.....	1 50			
" 11.....	R. Campbell.....	5 00			
1898.				1898.	
June 23....	Jas. T. Haney.....	10 00		June 25....	St. Catharines.
		157 00	15 00		



# Department of Railways and Canals.

STATEMENT showing the Highest and Lowest depth of water on the lower Mitre Sill of Lock No. 1, New Welland Canal, Port Dalhousie, for the fiscal year ending 30th June, 1898.

MONTHS.	LOWER SILL.		MONTHS.	LOWER SILL.	
	Highest.	Lowest.		Highest.	Lowest.
1897.	Ft. in.	Ft. in.	1898.	Ft. in.	Ft. in.
July.....	15 10	15 5	January.....	15 0	14 4
August.....	15 10	15 2	February.....	15 8	14 8
September.....	15 6	14 6	March.....	15 9	14 11
October.....	15 0	14 3	April.....	16 3	15 6
November.....	14 6	14 0	May.....	16 2	15 10
December.....	14 7	14 1	June.....	16 2	15 11

STATEMENT showing the Highest and Lowest depth of water on the Upper Mitre Sill of Lock No. 27, New Welland Canal, Port Colborne, for the fiscal year ending 30th June, 1898.

MONTHS.	UPPER SILL.		MONTHS.	UPPER SILL.	
	Highest.	Lowest.		Highest.	Lowest.
1897.	Ft. in.	Ft. in.	1898.	Ft. in.	Ft. in.
July....	15 5	14 7	January.....	16 3	13 3
August ..	16 0	14 6	February.....	15 3	13 3
September .....	15 5	14 0	March.....	16 5	13 7
October.....	15 2	12 8	April.....	17 4	14 6
November.....	15 9	12 5	May.....	15 4	14 5
December....	15 10	13 1	June.....	15 11	14 5

## ST. PETER'S CANAL.

ST. PETER'S, CAPE BRETON, 9th July, 1898.

DEAR SIR,—Since my taking charge on 6th December, 1897, as lockmaster and collector of tolls on St. Peter's Canal the sum of \$498.27 has been expended under my superintendence, and the following repairs have been made:—

1. Repairing sheave in wall at N. W. corner of lock by diver and removing loose stones on bottom.

2. Placing 7 mooring posts at N. E. entrance.

do 1 do N. E. end of lock.

do 4 do S. W. entrance.

3. Taking up mooring chain and anchor, and placing new buoy on same at N. entrance.

4. Building fender east side of canal, 100 feet above bridge, 100 feet long; also cribwork 40 feet long.

5. Renewing fenders at 200 ft. S. of bridge on east side, for 100 feet and placing 40 anchor pieces.

6. Building a shelter-house for bridge men, size of building 12 x 8 x 7 ft.

7. Bought one spare chain for lock gate of 95 feet.

8. Removing loose stone on slope east side of canal.

9. Removing loose rocks and débris at foot of slope on east side.

10. Renewing 11 new hanging fenders, 7 on west side and 4 on east side.

11. Cleaning out and painting waiting room.

12. Cleaning out, placing new stairs, door, and stove-pipe to loft for lockman.

13. Placing one pump for lockmaster's house.

14. Building new fence, repairing old one around the government property, and whitewashing same.

15. Repairing the government barn thoroughly, and whitewashing and painting doors of same.

16. Painting hall in lock-house, papering four rooms, and renewing plaster upstairs.

17. Whitewashing the government warehouse, painting casing and doors.

18. Repairing wharf, but did not have sufficient appropriation to make a complete job.

19. The St. Peter's Canal as a whole is in a fair condition with the exception of some of the old wooden work on east side, which is very rotten and likely to fall in the canal at any time.

20. The operation of St. Peter's Canal is in very good condition, the bridge will want new covering early next spring, the old one will do for the present by patching it up occasionally, it will also want painting; lock house will require painting, also some repairs.

I am dear sir,

Your obedient servant,

JNO. H. DEVEREUX.

COLLINGWOOD SCHREIBER, Esq., C.M.G.,

Chief Engineer, Department of Railways and Canals,  
Ottawa.

Department of Railways and Canals.

R E P O R T

OF THE

SECRETARY OF THE RAILWAY COMMITTEE

OF THE

PRIVY COUNCIL





## Department of Railways and Canals.

### RAILWAY COMMITTEE OF THE PRIVY COUNCIL.

The Minister of Railways and Canals being Chairman of the Railway Committee of the Privy Council, on which certain extensive duties are imposed by the Railway Act, 1888, and its amendments, it seems proper that a brief record should here be made of the matters submitted to the committee during the period from the 15th November, 1897, to the 15th November, 1898, and the decisions arrived at. They are as follows :—

Applications of the Grand Trunk Railway Company *re* interlocking and derailing appliances at the crossing of the G.T.R. by the Canada Southern Railway, at the Ontario Peat Fuel Company's works in the Township of Wainfleet, and as to the payment for the same.—Order issued directing that the Grand Trunk Railway Co. to bear the cost of the extra appliances beyond the protection mentioned in the Order approving of the crossing.

Application of the Grand Trunk Railway Company for approval of plan and book of reference of a branch line at Merritton.—Approved.

Application of the Grand Trunk Railway Company for permission to cross the Niagara Central Railway at Merritton.—Granted.

Application of the Grand Trunk Railway Company for permission to cross the Port Dalhousie, St. Catharines and Thorold Street Railway at Merritton.—Granted.

Protection to be provided at the crossing of the Intercolonial Railway by the St. John Electric Street Railway in St. John, N.B.—Postponed.

Application of Mr. Hugh McLean for an Order compelling the Central Railway Company of New Brunswick to put a draw in their proposed bridge across the Salmon River, near Chipman, N.B.—Dismissed.

Application of the Grand Trunk Railway *re* Orders of the 29th November, 1894, with respect to crossings of steam railways by the Toronto and Montreal Street Railway Companies —Under consideration.

Application of the Municipality of Three Rivers for an Order compelling the Canadian Pacific Railway Company to provide certain drainage, &c.—Order issued directing that the Railway Company provide one culvert, &c.

Application of the Kingston, Napanee and Western Railway Company for permission to cross the Canadian Pacific Railway at Tweed, Ont.—Postponed.

Application of the Corporation of the Township of Shefford for permission to open a road across the tracks of the Stanstead, Shefford and Chambly Railway, which is a division of the Central Vermont Railway, at Gallaghers Cut.—Granted.

Petition of Mr. Charles Sturrock for an Order compelling the Grand Trunk Railway Company to refund him \$1,079.20 overcharged rates on coal, and also the costs of his application.—Dismissed.

Application of the Canadian Pacific Railway Company for permission to construct a branch line upon and to carry it along road allowance on west side of sections 22, 27 and 34, of Township 11, Range 2, east of 1st Principal Meridian.—Withdrawn.

Application of the London Street Railway Company for permission to cross at rail level, the Grand Trunk Railway on Rectory Street, in the City of London.—Granted.

Application of the United Counties Railway Company for permission to cross at rail level, the Central Vermont Railway at Iberville.—Postponed.

Application of the Ottawa and New York Railway Company for permission to cross at rail level, the Canadian Pacific Railway at South Finch.—Granted.

Application of the Winnipeg Street Railway Company for permission to cross at rail level, the Canadian Pacific Railway at Main Street and Higgins Avenue in the City of Winnipeg.—Under consideration.

Application of the Canadian Pacific Railway Company for permission to fill in part of trestle on branch line from Peterborough to Dickson's Mills.—Granted.

Application of the Grand Trunk Railway Company for permission to lay a siding from its railway to McLaughlin's Mill on the corner of Bay and Esplanade Streets, Toronto.—Granted.

Application of the Ontario and Quebec Railway Company (C.P.R.) for permission to change the location of their line between Mono Road and Melville Junction, in Township of Caledon.—Postponed.

Application of the Central Ontario Railway Company for permission to leave out the packing from the frogs and wing rails from December to April of each year, both months inclusive.—Dismissed.

Application of the Corporation of the Town of Galt for permission to make a crossing over the Canadian Pacific Railway at Myrtle Avenue.—Under consideration.

Application of Mr. John Owens for permission to construct a flume or waterway under the Calgary and Edmonton Railway, on Sec. 12, Tp. 21, Range 1, west of 5th Meridian.—Granted.

Application of Mr. R. A. Wallace for permission to construct a flume or waterway under the Calgary and Edmonton Railway, on Sec. 7, Tp. 19, Range 28, west of 4th Meridian.—Granted.

Application of the Calgary Irrigation Company for permission to construct irrigation ditches under the Canadian Pacific and Calgary and Edmonton Railways.—Granted.

Application of the Pontiac Pacific Junction Railway Company for permission to cross the tracks of the Hull Electric and Canadian Pacific Railway Companies and to take certain land in the Town of Aylmer.—Granted.

Application of the Nakusp and Slocan Railway Company for approval of plan and book of reference of a proposed branch line from Three Forks to Bear Lake and Whitewater, B.C.—Withdrawn.

Application of Mr. Robert Reid *re* farm crossings of Ottawa, Arnprior and Parry Sound Railway.—Under consideration.

Application of the Erie and Huron Railway Company for permission to construct a branch line from their main line to the works of the Bushnell Oil Company in the Town of Sarnia.—Granted.

Complaint of Mr. William Pearce *re* damages to his property by floods of the Bow River caused by the building of an embankment by the Calgary and Edmonton Railway Company, and for an order compelling the railway company to take steps to prevent future damages.—Withdrawn.

Application of the Grand Trunk Railway Company for approval of plan of proposed subway at St. Lambert in order to avoid the crossing of their tracks at Victoria Avenue.—Approved.



## Department of Railways and Canals.

Application of Mr. John Milway for a farm crossing over the Canadian Pacific Railway at Calumet.—Settled.

Application of the Canadian Pacific Railway Company for approval of plan of certain proposed changes in their bridge at Sicamous Narrows, B.C.—Under consideration.

Application of the Montreal Belt Line Railway Company for permission to run its line along Lasalle and Desjardins Streets in the Town of Maisonneuve.—Granted.

Application of the Quebec, Montmorency and Charlevoix Railway Company for permission to cross, at rail level, the Canadian Pacific Railway at two points in the City of Quebec. Also to use a track which will connect and form a junction with the C. P. Ry.—Granted.

Application of the Quebec Bridge Company for approval of plans of proposed bridge across the River St. Lawrence near Quebec.—Approved.

Application of the Pontiac Pacific Junction Railway Company for approval of plan of proposed bridge across the Ottawa River from Nepean Point to Hull.—Approved.

Application of the Parish of St. Blaise to have the costs in connection with its petition for a highway crossing over the Grand Trunk Railway be taxed by the committee against the railway company.—Under consideration.

Application of the Grand Trunk Railway Company for permission to construct a siding along Strachan Avenue to the Massey Harris Company's works, in the City of Toronto.—Granted.

Application of the St. Thomas Electric Street Railway Company for permission to cross, at rail level, the tracks of the London and Port Stanley Railway at Talbot Street and Wellington Street, in the City of St. Thomas, and on the line between the 7th and 8th Concessions of the Township of Yarmouth.—Granted.

Application of the Ottawa and New York Railway Company for permission to cross the Canada Atlantic Railway, at rail level, at Hawthorne, being about five miles from the City of Ottawa.—Granted

Application of the Canadian Pacific Railway Company for permission to cross, at rail level, the Montreal Street Railway on Notre Dame Street, Maisonneuve.—Granted.

Application of the Town of Maisonneuve for approval of a crossing, at rail level, of the Montreal Island Belt Line Railway, by the Montreal Street Railway on Lasalle Avenue, at the intersection of Ste. Catherine and Ontario Streets.—Granted.

Application of the Corporation of the City of St. Henri *re* opening of Gareau Street across the tracks of the Grand Trunk Railway.—Under consideration.

Application of the Municipality of the Parish of Notre Dame de Stanbridge, for an order compelling the Canadian Pacific Railway Company to construct a highway crossing over their track between lots 1419 and 1423.—Dismissed.

Application of the Village of Kingsville (Thetford Mines) County of Megantic, for an order compelling the Quebec Central Railway Company to construct a crossing over their track at a certain street in that village.—Dismissed.

Petition of the Toronto, Hamilton and Buffalo Railway Company asking that Order No. 7,447, *re* highway crossing at station 100x12, be rescinded and that the matter be reconsidered.—Under consideration.

Petition of residents on road between Tolendal and Barrie, in Township of Innisfil, asking that the Grand Trunk Railway Company and the township, or either, be directed to construct an overhead crossing where the railway crosses the road about one mile from Allandale Station.—Under consideration.

Application of the British Columbia Electric Railway Company for permission to cross, at rail level, the track of the Canadian Pacific Railway at the intersection of Hastings and Carroll Streets, Vancouver.—Granted.

Application of the British Columbia Electric Railway Company for permission to cross, at rail level, the track of the Canadian Pacific Railway on Powell Street, Vancouver.—Granted.

Application of the Grand Trunk Railway *re* the fixing of the additional expense at the crossing, of the Grand Trunk Railway by the Montreal Street Railway.—Postponed.

Application of the Kingston, Portsmouth and Cataraqui Electric Street Railway Company for permission to cross, at rail level, the track of the Kingston and Pembroke Railway Company on Montreal Street, Kingston.—Granted.

Application of the Canadian Pacific Railway Company for the committee to fix the terms and conditions set out in schedule submitted as those on which the said company may use, jointly with other parties, the passenger station and tracks, and approaches thereto near Sappers' Bridge, Ottawa, after May 1st, 1916.—Under consideration.

Application of the Ottawa and New York Railway Company for the committee to fix the terms and conditions set out in schedule submitted as those on which the said company may use, jointly with other parties, the passenger station and tracks, and approaches thereto near Sappers' Bridge, Ottawa, after May 1st, 1916.—Under consideration.

Application of the Ottawa and New York Railway Company for permission to enter certain property in the City of Ottawa to be used for additional freight purposes by said company, over the tracks and grounds of the Ottawa, Arnprior and Parry Sound Railway Company.—Granted.

Application of the Montreal and Ottawa Railway Company for approval of place and mode of junction of their Railway with Ottawa, Arnprior and Parry Sound Railway near Ann street in the city of Ottawa.—Granted.

Application of the Montreal and Ottawa Railway Company for approval of the place and mode of junction and crossing, at rail level, of their railway with the St. Lawrence and Ottawa Railway east of the Rideau River, near the City of Ottawa.—Granted.

Application of the Crow's Nest Pass Railway Company for approval of plan of proposed bridge across the Kootenay River near Wardner, B. C.—Approved.

Application of the Canada Southern Railway Company for permission to fill in a portion of their trestle across Chippawa Creek, in the County of Welland.—Granted.

Application of the City of Toronto for permission to lay water pipes, under the Grand Trunk and Canadian Pacific Railways, on Lansdowne Avenue, Toronto.—Granted.

Application of the Ottawa and New York Railway Company for permission to use certain tracks of the Montreal and Ottawa Railway Company near Hurdman's Bridge Road, in or near the City of Ottawa.—Granted.



## Department of Railways and Canals.

Application of the St. Thomas Street Railway Company for permission to cross under the Michigan Central Railway on 1st Avenue in the City of St. Thomas.—Granted.

Application of the Montreal and Ottawa Railway Company for permission to cross, at rail level, the Rockland Branch of the Canada Atlantic Railway near the Village of Hammond.—Granted.

Application of the Ottawa and New York Railway Company to cross, at rail level, the Grand Trunk Railway near Cornwall.—Granted.

Application of the Midland Railway Company of Nova Scotia for approval of plan of proposed bridge across the St. Croix River.—Approved on certain conditions.

Application of the Ottawa Electric Railway Company for permission to cross, at rail level, the tracks of the Canada Atlantic and Ottawa, Arnprior and Parry Sound Railway Companies at Elgin Street, Ottawa.—Dismissed.

Application of the Toronto, Hamilton and Buffalo Railway Company for approval of plans and profiles of crossings of highways on Ridgeville Branch, in the Township of Pelham.—Under consideration.

Application of the Quebec, Montmorency and Charlevoix Railway Company for permission to cross, at rail level, the Canadian Pacific Railway on Crown Street, in the City of Quebec.—Granted.

Messrs. Chisholm and Liogie submit a memorandum giving reasons why the Toronto, Hamilton and Buffalo Railway Company should pay to Mrs. Powell, her expenses in connection with variation of order *re* closing of Hughson Street, Hamilton.—Under consideration.

Application of the Ottawa, Arnprior and Parry Sound Railway Company to review and rescind or vary the order of the 27th of September, 1898, (No. 7777), granting permission to the Ottawa and New York Railway Company to reach their freight terminals in the City of Ottawa by means of laying a track over the grounds under lease from the Crown to the Ottawa, Arnprior and Parry Sound Railway Company.—Under consideration.

COLLINGWOOD SCHREIBER,

*Secretary, Railway Committee of the P.C.*

Prepared by

J. W. PUGSLEY,

*Clerk of the Railway Committee of the P.C.*





Department of Railways and Canals.

PART II

STATEMENTS OF THE ACCOUNTANT





# Department of Railways and Canals

## No. 1.

STATEMENT showing the amount expended by the Department of Railways and Canals, Dominion of Canada, during the Fiscal Year ending 30th June, 1898.

Name of Work.	Chargeable to Capital.	Chargeable to Income.	Chargeable to Revenue.	
			Staff.	Repairs.
CANALS.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Beauharnois.....	25,000 00	5,799 34	20,650 00	16,164 92
Culbute.....				100 00
Carillon.....		5,082 03	11,697 81	10,993 61
Grenville.....	82,663 37		17,992 90	12,466 51
Chambly.....		13,184 68	15,011 50	15,431 02
Cornwall.....	133,208 96		57,282 50	33,391 92
Lachine.....	216,717 44	819 62		
Lake St. Louis.....	64,495 83			
Lake St. Francis.....	3,420 00			
Murray.....			5,799 94	4,710 23
Rideau.....		13,608 39	30,759 05	26,599 93
Sault Ste. Marie.....	21,004 56		14,389 92	8,172 09
Soulanges.....	1,016,401 00			
Ste. Anne's.....			1,904 10	1,699 44
St. Lawrence { North Channel.....	171,336 65			
{ Galops Channel.....	32,710 00			
{ River Reaches.....	7,491 11			
St. Ours.....			2,049 67	692 04
St. Peters.....		111 70	2,785 25	453 85
Trent.....	351,273 31	8,991 54	5,034 60	4,998 80
Welland.....		34,803 25	84,806 54	59,571 66
Williamsburg, Galops.....	734,492 07	}	10,708 66	8,032 84
" Rapide Plat.....	116,072 55			
" Farran's Point.....	231,321 44			
	3,207,608 29			
Less refund of previous years—				
Chambly..... \$ 150 00				
St. Peter's..... 208 50				
	358 50			
Total.....	3,207,249 79	82,400 55	280,872 44	203,478 86
GENERAL ON CANALS.				
Dredge Vessels, Lachine.....				1,999 94
" Rideau.....				6,575 43
Miscellaneous.....			2,069 37	2,773 26
Salaries and Contingencies, Canal Officers.....			31,756 52	
Sunday labour.....			11,109 90	
Surveys and Inspections.....		1,719 69		
Total.....		1,719 69	44,935 79	11,348 63
RAILWAYS.				
Canadian Pacific.....	692 17			
Cape Breton.....	389 60			
Crows' Nest Pass.....		1,843 75		
Drummond County.....		2,000 00		
Intercolonial.....	252,367 20	70,000 00	3,257,648 51	
Prince Edward Island.....	17,541 88		231,418 74	
Windsor Branch.....			18,181 63	
Total.....	270,990 85	73,843 75	3,507,248 88	

STATEMENT showing the amount expended by the Department of Railways and Canals, &c.—*Concluded.*

Name of Work.	Chargeable to Capital.	Chargeable to Income.	Chargeable to Revenue.	
			Staff.	Repairs.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
GENERAL ON RAILWAYS.				
Exploratory Survey to Klondike District.....		4,996 00		
Railway Statistics.....		174 68		
Railway Subsidies.....		*1,228,334 78		
Repairs to Governor General's Car.....				1,400 00
Reporting evidence before Railway Committee.....		123 75		
Surveys and Inspections.....		3,033 53		
Total.....		1,236,662 74		1,400 00
MISCELLANEOUS.				
Arbitrations and Awards.....		667 00		
Grand Trunk Ry., for special train service in 1891.....		1,015 50		
Costs of Litigation.....		1,947 25		
Miscellaneous works not provided for..		422 37		
Salaries of engineers, draughtsmen, &c.....		18,256 16		
Salaries of extra clerks, &c.....		1,890 07		
Total.....		24,198 35		
RECAPITULATION.				
Total on Canals.....	3,207,249 79	82,400 55	280,872 44	203,478 86
"    General.....		1,719 69	44,935 79	11,348 63
Total on Canals.....	3,207,249 79	84,120 24	325,808 23	214,827 49
Total on Railways.....	270,990 85	73,843 75	3,507,248 88	
"    General.....		1,236,662 74		1,400 00
Total on Railways.....	270,990 85	1,310,506 49	3,507,248 88	1,400 00
Grand Total, Railways and Canals, including Miscellaneous.....	3,478,240 64	1,418,825 08	3,833,057 11	216,227 49

\*This amount does not include annual payment of \$183,600 to the Atlantic and North-west Railway Company.

Total amount expended, \$8,946,350.32.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals.

No. 2.

STATEMENTS showing the amounts expended on Construction, Renewals, Ordinary Repairs and Working Staff of the Canals of the Dominion of Canada, up to the 30th June, 1898.

ST. PETER'S CANAL.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation	.....	156,523 32	.....	.....	.....
"                    since	1868	21,519 72	.....	.....	.....
"                    "          "	1869	70,719 80	.....	.....	.....
"                    "          "	1870	.....	46,193 57	.....	.....
"                    "          "	1871	.....	.....	225 36	555 78
"                    "          "	1872	.....	.....	280 00	6,122 07
"                    "          "	1873	.....	.....	343 32	6,539 58
"                    "          "	1874	.....	.....	725 93	1,558 57
"                    "          "	1875	20 97	.....	560 00	889 35
"                    "          "	1876	11,125 00	.....	641 55	.....
"                    "          "	1877	63,330 18	.....	600 00	17 45
"                    "          "	1878	26,511 51	.....	600 00	.....
"                    "          "	1879	107,337 75	.....	631 50	.....
"                    "          "	1880	80,120 54	.....	400 00	.....
"                    "          "	1881	69,434 76	.....	959 58	.....
"                    "          "	1882	484 00	.....	1,920 54	200 63
"                    "          "	1883	.....	.....	2,089 19	232 42
"                    "          "	1884	2,471 40	.....	2,601 47	367 85
"                    "          "	1885	16,820 15	.....	1,929 11	183 11
"                    "          "	1886	2,316 85	.....	2,360 67	297 81
"                    "          "	1887	1,087 75	750 00	2,777 13	343 23
"                    "          "	1888	.....	.....	3,217 77	1,588 40
"                    "          "	1889	.....	500 00	3,085 29	353 38
"                    "          "	1890	.....	.....	3,110 15	255 34
"                    "          "	1891	972 65	510 53	3,255 30	312 02
"                    "          "	1892	14,387 00	30,936 82	3,007 70	1,461 24
"                    "          "	1893	811 59	9,987 78	2,938 15	1,856 30
"                    "          "	1894	437 05	3,852 21	2,935 94	1,986 70
"                    "          "	1895	868 44	26,222 46	2,499 81	353 55
"                    "          "	1896	1,455 21	16,743 64	2,182 04	260 90
"                    "          "	1897	.....	.....	2,728 38	1 20
"                    "          "	1898	.....	111 70	2,785 25	453 85
LESS—Refund of previous years	.....	648,755 64 208 50	.....	.....	.....
Total	.....	*648,547 14	135,808 71	51,391 13	26,190 73

\*Expenditure as above.....\$ 648,547 14  
Less expenditure prior to Confederation . . . . . 156,523 32  
Agreeing with Public Accounts, 1898, page xvi. .... \$ 492,023 82

LEONARD SHANNON,  
Accountant.



STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

BAIE VERTE CANAL—SURVEY.

				Year ending 30th June.	Capital.	Income.
					\$ cts.	\$ cts.
Government expenditure prior to Confederation.....				1868		
" since " .....				1869		
" " " .....				1870		
" " " .....				1871		17,929 34
" " " .....				1872		6,399 41
" " " .....				1873		14,943 83
" " " .....				1874		4,018 90
" " " .....				1875		443 00
" " " .....				1876		110 75
" " " .....				1877		22 30
" " " .....				1878		
" " " .....				1879		
" " " .....				1880		
" " " .....				1881		520 00
" " " .....				1882		
" " " .....				1883		
" " " .....				1884		
" " " .....				1885		
" " " .....				1886		
" " " .....				1887		
" " " .....				1888		
" " " .....				1889		
" " " .....				1890		
" " " .....				1891		
" " " .....				1892		
" " " .....				1893		
" " " .....				1894		
" " " .....				1895		
" " " .....				1896		
" " " .....				1897		
" " " .....				1898		
Total .....						44,387 53

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

# Department of Railways and Canals.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

## LACHINE CANAL.

	Year ending 30th June.	Chargeable to Capital.		Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Expenditure by Imperial Gov- ernment. . . . .	.....	40,000 00		.....	.....	.....
Government expenditure prior to Confederation. . . . .	.....	2,547,532 85		.....	.....	.....
Government expenditure since Confederation. . . . .	1868			1,852 70	13,742 05	10,431 51
" " " " " "	1869	2,000 00		.....	14,209 02	12,085 84
Cost of original construction and enlargement of 1843 to 1848. .	.....		2,589,532 85			
Expenditure by Dominion Gov- ernment . . . . .	1870			.....	15,834 49	13,302 39
" " " " " "	1871			12,231 40	17,478 52	15,093 25
" " " " " "	1872	36,708 15		.....	16,076 93	12,334 69
" " " " " "	1873	7,824 28		35,158 21	23,601 03	34,300 60
" " " " " "	1874	158,618 35		.....	25,811 07	22,828 66
" " " " " "	1875	197,420 52		.....	28,592 01	30,057 34
" " " " " "	1876	327,769 39		.....	33,797 73	29,103 65
" " " " " "	1877	1,439,375 73		.....	33,148 86	19,824 33
" " " " " "	1878	1,484,619 63		.....	39,062 97	13,646 41
" " " " " "	1879	958,053 30		.....	42,338 84	12,400 78
" " " " " "	1880	369,566 74		.....	38,950 90	10,223 62
" " " " " "	1881	292,165 51		.....	39,027 99	19,888 33
" " " " " "	1882	252,821 33		2,978 66	41,158 90	17,116 46
" " " " " "	1883	396,496 96		1,859 68	45,554 91	18,199 59
" " " " " "	1884	188,266 18		.....	48,624 51	19,683 24
" " " " " "	1885	111,215 23		.....	49,004 85	20,199 78
" " " " " "	1886	210,509 42		.....	50,969 10	19,199 18
" " " " " "	1887	28,772 52		12,981 59	53,113 97	22,567 81
" " " " " "	1888	19,414 34		7,996 38	52,220 61	19,999 64
" " " " " "	1889	76,032 96		972 71	54,110 67	22,957 71
" " " " " "	1890	7,448 03		8,238 46	53,114 34	22,999 38
" " " " " "	1891	217 53		16,155 75	50,721 69	36,292 98
" " " " " "	1892	87,852 35		27,480 80	57,729 37	67,499 62
" " " " " "	1893	445,983 21		50,937 40	53,185 00	51,616 79
" " " " " "	1894	64,345 14		15,856 74	60,174 03	40,939 70
" " " " " "	1895	189,944 36		32,405 20	56,337 44	25,891 45
" " " " " "	1896	184,998 25		8,193 15	58,342 96	24,950 20
" " " " " "	1897	282,052 48		14,664 21	57,533 20	25,820 73
" " " " " "	1898	216,717 44		819 62	57,282 50	33,391 92
Cost of enlargement. . . . .	.....		8,035,209 33			
Total. . . . .	.....		10,624,742 18	250,782 66	1,275,859 46	744,847 58

Total expenditure on capital account as above ..... \$10,624,742 18  
Less charged to St. Lawrence River and Canals, see page 9. . \$2,950,104 15  
Less expenditure by Imperial Government. . . . . 40,000 00  
..... 2,990,104 15  
Agreeing with Public Accounts balance sheet, 1898, page xvi. . . . . \$ 7,634,638 03

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

BEAUHARNOIS CANAL.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
			\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation		1,611,424 11			
"                    since	1868		63,193 75	9,349 99	6,216 98
"                    "	1869		55 00	9,626 99	6,498 57
"                    "	1870		27 50	10,117 57	6,384 81
"                    "	1871			12,316 53	5,722 36
"                    "	1872		27 50	11,792 46	15,733 38
"                    "	1873		5,122 50	12,210 73	9,882 06
"                    "	1874		26 00	15,392 51	10,990 56
"                    "	1875		36 00	14,399 32	12,253 01
"                    "	1876			14,465 86	17,170 83
"                    "	1877			14,377 63	15,207 36
"                    "	1878			14,383 37	9,861 05
"                    "	1879			15,015 86	10,370 71
"                    "	1880	266 15		15,362 61	8,997 34
"                    "	1881			17,659 93	10,770 67
"                    "	1882			18,804 53	20,813 86
"                    "	1883		6,727 44	18,287 77	15,826 71
"                    "	1884		3,277 98	19,107 38	16,232 61
"                    "	1885		7,999 79	18,960 40	14,637 70
"                    "	1886		8,491 80	19,228 90	14,356 00
"                    "	1887		3,633 57	18,867 45	14,999 88
"                    "	1888		14,411 97	19,325 05	14,285 98
"                    "	1889		10,993 52	20,019 11	14,982 54
"                    "	1890			19,847 42	14,999 20
"                    "	1891		17,085 68	18,886 86	12,537 39
"                    "	1892		1,696 23	20,050 01	14,999 80
"                    "	1893			20,348 34	14,107 11
"                    "	1894		6,547 72	20,574 53	13,903 46
"                    "	1895		27,982 93	20,428 59	12,299 49
"                    "	1896			20,725 47	15,050 85
"                    "	1897		9,813 15	21,012 64	14,862 98
"                    "	1898	25,000 00	5,799 34	20,650 00	16,164 92
Total .....		*1,636,690 26	192,949 37	521,595 81	401,120 17

\* See page 9 for total cost of St. Lawrence River and Canals.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



Department of Railways and Canals.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

ST. LAWRENCE RIVER AND CANALS, SURVEYS, &c.

	Year ending 30th June.	Chargeable to Capital.	Chargeable to Income.
		\$ cts.	\$ cts.
Government expenditure prior to Confederation .....		18,442 85	98,378 46
" " since " .....	1868		
" " " " .....	1869		
" " " " .....	1870		
" " " " .....	1871		
" " " " .....	1872		
" " " " .....	1873	33,241 69	
" " " " .....	1874	26,541 30	
" " " " .....	1875	20,611 36	
" " " " .....	1876	50,215 47	
" " " " .....	1877	47,377 31	
" " " " .....	1878	5,570 46	
" " " " .....	1879	9,265 77	
" " " " .....	1880	9,214 56	
" " " " .....	1881	6,927 96	
" " " " .....	1882	28,933 45	
" " " " .....	1883	44,874 31	
" " " " .....	1884	89,846 03	
" " " " .....	1885	115,110 17	
" " " " .....	1886	116,051 73	
" " " " .....	1887	74,437 31	
" " " " .....	1888	56,482 85	
" " " " .....	1889	18,493 92	
" " " " .....	1890	23,979 91	
" " " " .....	1891	35,137 25	
" " " " .....	1892	59,779 31	
" " " " .....	1893	52,643 39	
" " " " .....	1894	13,721 66	
" " " " .....	1895	182,775 75	
" " " " .....	1896	7,457 05	
" " " " .....	1897	12,347 31	
" " " " .....	1898	211,537 76	
Total .....		1,371,017 89	98,378 46

ST. LAWRENCE RIVER AND CANALS.

St. Lawrence River and Canals, as above .....	\$ 1,371,017 89
Beauharnois Canal, see page 8 .....	1,636,690 26
Cornwall Canal " " 12 .....	6,525,359 00
Williamsburg Canals " " 14 .....	5,778,580 10
Lake St. Louis " " 10 .....	192,458 69
Soulanges Canal " " 26 .....	3,655,435 61
Lachine Canal, from prior to Confederation to June 30, 1875, see page 7...	2,950,104 15
Lake St. Francis, see page 11 .....	3,420 00
Agreeing with Public Accounts Balance Sheet, 1898, page xvi .....	\$ 22,113,065 70

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

## LAKE ST. LOUIS.

				Year ending 30th June.	Chargeable to Capital.	Chargeable to Income.
					\$ cts.	\$ cts.
Government expenditure prior to Confederation.				1868		
"	"	since	"	1869		
"	"	"	"	1870		
"	"	"	"	1871		
"	"	"	"	1872		
"	"	"	"	1873		
"	"	"	"	1874		
"	"	"	"	1875		
"	"	"	"	1876		
"	"	"	"	1877		
"	"	"	"	1878		
"	"	"	"	1879		
"	"	"	"	1880		
"	"	"	"	1881		
"	"	"	"	1882		
"	"	"	"	1883		
"	"	"	"	1884		
"	"	"	"	1885		
"	"	"	"	1886		
"	"	"	"	1887		
"	"	"	"	1888		
"	"	"	"	1889		
"	"	"	"	1890		
"	"	"	"	1891		
"	"	"	"	1892		
"	"	"	"	1893		
"	"	"	"	1894		
"	"	"	"	1895	4,753 14	
"	"	"	"	1896	49,909 31	
"	"	"	"	1897	73,300 41	
"	"	"	"	1898	64,495 83	
Total.					*192,458 69	

\* Included in total cost of St. Lawrence River and Canals, see page 9.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

LAKE ST. FRANCIS.

				Year ending 30th June.	Capital.	Renewals Chargeable to Income.
					\$ cts.	\$ cts.
Government expenditure since Confederation.....				1868		
"	"	"	"	1869		
"	"	"	"	1870		
"	"	"	"	1871		
"	"	"	"	1872		
"	"	"	"	1873		
"	"	"	"	1874		
"	"	"	"	1875		
"	"	"	"	1876		
"	"	"	"	1877		
"	"	"	"	1878		
"	"	"	"	1879		
"	"	"	"	1880		
"	"	"	"	1881		
"	"	"	"	1882		
"	"	"	"	1883		
"	"	"	"	1884		
"	"	"	"	1885		
"	"	"	"	1886		
"	"	"	"	1887		
"	"	"	"	1888		
"	"	"	"	1889		
"	"	"	"	1890		
"	"	"	"	1891		
"	"	"	"	1892		
"	"	"	"	1893		
"	"	"	"	1894		
"	"	"	"	1895		
"	"	"	"	1896		
"	"	"	"	1897		
"	"	"	"	1898	3,420 00	
Total.....					*3,420 00	

\* Included in total cost of St. Lawrence River and Canals, see page 9.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

CORNWALL CANAL.

	Year ending 30th June.	Chargeable to Capital.		Renewals Chargeable to Income.	Staff.	Repairs.					
		\$	cts.	\$	cts.	\$	cts.				
Government expenditure prior to Confederation.....		1,933,152	69								
Government expenditure since Confederation..	1868			2,786	00	11,244	47	3,774	18		
"	1869	10,692	04		10,347	91	3,859	14			
"	1870			17,780	05	10,368	16	7,145	42		
"	1871			7	50	11,848	39	8,891	61		
"	1872			10,000	21	10,594	30	8,163	70		
"	1873			1,011	75	13,042	25	12,467	65		
"	1874					13,405	20	7,610	70		
"	1875	1,780	00			13,351	91	7,097	34		
Cost of original construction ..				1,945,624	73						
Expenditure by Dominion Gov- ernment....	1876					13,320	61	6,423	67		
"	1877	49,211	37		13,375	70	6,440	54			
"	1878	145,015	45		13,825	50	4,935	21			
"	1879	143,092	05		13,817	96	4,983	15			
"	1880	109,454	95		14,440	33	9,735	76			
"	1881	53,948	14		15,173	60	5,524	10			
"	1882	44,587	61		15,052	20	6,634	62			
"	1883	21,728	93		18,283	67	8,361	71			
"	1884	22,018	13		18,475	48	9,007	73			
"	1885	62,034	90	16,298	96	15,988	96	12,368	51		
"	1886	57,820	83	6,960	95	15,994	80	11,832	83		
"	1887	46,966	43		17,520	54	12,100	29			
"	1888	67,945	74		16,938	54	13,942	64			
"	1889	163,993	85		17,890	55	58,205	26			
"	1890	365,038	01	2,000	00	17,063	49	12,758	18		
"	1891	599,001	85	1,459	98	16,077	72	9,830	05		
"	1892	398,555	25	2,345	26	15,596	66	9,864	36		
"	1893	352,536	13			15,173	01	9,668	14		
"	1894	404,990	22			15,344	02	7,733	54		
"	1895	450,689	65	21,497	74	15,414	56	13,053	55		
"	1896	448,408	31	2,175	00	15,472	26	25,259	56		
"	1897	438,487	51			15,540	43	16,438	32		
"	1898	133,208	96			15,011	50	15,431	02		
Cost of enlargement .....				4,579,734	27						
Total . . . . .				*6,525,359	00	84,323	40	454,994	68	349,542	48

\* Included in total cost of St. Lawrence River and Canals, see page 9.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

WILLIAMSBURG CANALS.

	Year ending 30th June.	Capital.				Renewals Chargeable to Income.	Staff.	Repairs.	
		Farran's Point.	Galops.	Rapide Plat.	Total.				
		£	cts.	£	cts.	£	cts.	£	cts.
Government expenditure prior to Confederation being amount of original construction.	1868				1,324,655 54			5,745 97	6,442 41
Government expenditure since Confederation.	1869							5,769 81	5,670 88
"	1870							5,573 13	6,546 16
"	1871							6,382 17	5,308 41
"	1872							5,542 94	3,230 07
"	1873						1,077 00	6,424 49	7,347 75
"	1874							6,857 19	7,395 92
"	1875							6,547 62	4,110 29
"	1876							7,418 39	11,690 98
"	1877							7,388 68	10,053 61
"	1878							7,430 11	4,449 78
"	1879							7,517 20	3,549 71
"	1880							7,590 15	3,999 77
"	1881							7,572 35	5,020 73
"	1882							7,589 44	7,447 69
"	1883							7,423 48	7,299 39
"	1884					13 19		7,757 04	7,349 37
"	1885		70,764 07	32,473 05	2,473 44			7,696 67	8,198 03
"	1886		78,014 92	71,820 79	103,237 12			7,671 54	7,847 05
"	1887		32,862 02	82,990 98	149,835 71			7,635 54	7,904 76
"	1888		16,628 95	53,499 34	115,853 00			7,646 79	8,190 13
"	1889		37,661 15	22,206 11	70,128 29		1,613 67	7,485 28	8,794 61
"	1890		126,417 42	12,660 95	59,867 26			8,954 53	8,191 69
"	1891	2,853 76	172,779 88	55,036 96	139,078 37			8,678 25	7,987 40
"	1892		218,511 17	158,034 15	230,670 60			9,458 33	8,551 32
"	1893		154,524 01	217,669 28	376,545 32		797 83	8,676 03	8,347 97
"	1894		223,992 81	274,397 42	372,193 29		3,675 00	10,230 09	7,029 95
"	1895		118,464 53	228,892 70	498,390 23		13,720 36	9,675 09	7,371 37





# Department of Railways and Canals.

STATEMENT showing the amounts expended on Construction, Renewals, &c.—*Con.*

## WELLAND CANAL.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Imperial Government.....		222,220 00			
Government expenditure prior to Confederation.....		7,416,019 83			
" " since " .. 1868		12,097 84		37,679 05	38,852 96
" " " .. 1869		43,486 36		39,060 61	50,773 03
" " " .. 1870			22,173 72	40,340 45	65,009 19
" " " .. 1871			48,569 10	42,383 33	53,381 02
" " " .. 1872		53,680 32	6,022 44	37,085 37	50,276 90
" " " .. 1873		82,282 20	47,876 27	45,382 99	66,550 73
" " " .. 1874		746,420 61		50,966 48	103,666 99
" " " .. 1875		1,047,119 91		52,595 00	88,539 99
" " " .. 1876		1,569,478 19	700 00	57,623 31	81,376 12
" " " .. 1877		2,199,962 61		59,963 47	49,783 93
" " " .. 1878		2,138,392 99		60,138 59	66,393 53
" " " .. 1879		1,552,697 41		59,912 23	56,755 57
" " " .. 1880		1,252,924 75		63,198 10	76,535 25
" " " .. 1881		1,242,943 37	6,593 19	56,398 04	69,249 53
" " " .. 1882		603,402 17	13,664 80	74,641 51	84,374 97
" " " .. 1883		549,433 29	5,979 03	109,207 21	72,707 62
" " " .. 1884		432,336 21		113,276 87	90,926 97
" " " .. 1885		463,505 38	6,150 21	112,670 00	91,534 66
" " " .. 1886		215,380 75	1,359 00	111,660 22	69,507 48
" " " .. 1887		1,071,073 87	3,828 67	109,371 69	77,440 80
" " " .. 1888		429,720 94	10,740 86	110,806 01	86,518 97
" " " .. 1889		225,910 21	43,803 80	113,587 05	77,547 77
" " " .. 1890		117,633 22	51,648 28	109,202 02	72,686 19
" " " .. 1891		36,371 03	19,767 73	107,662 63	82,548 30
" " " .. 1892		29,541 21	9,008 80	104,673 73	73,771 87
" " " .. 1893		8,259 94	25,103 13	104,926 73	65,016 84
" " " .. 1894		1,571 78	13,430 20	102,018 80	53,053 71
" " " .. 1895		3,809 35	24,245 02	90,438 07	48,270 94
" " " .. 1896		1,677 67	18,768 99	87,988 11	62,542 64
" " " .. 1897		2,282 35	22,283 06	88,095 20	41,247 81
" " " .. 1898			34,803 25	84,806 54	59,571 66
Total.....		*23,771,635 76	436,519 55	2,437,789 41	2,126,413 94

\*Total expenditure as above.....\$ 23,771,635 76  
Less expenditure by Imperial Government..... 222,220 00

Agreeing with Public Accounts Balance Sheet, 1898, page xvi.\$ 23,549,415 76

Original cost of construction including first enlargement.....\$ 7,693,824 03  
Enlargement, including new Welland Canal..... 16,077,811 73

Total expenditure as above.....\$ 23,771,635 76

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

STE ANNE'S LOCK AND CANAL.

				Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
					\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation				1868	134,456 51			
" since				1869			778 16	432 47
" "				1870			1,062 96	1,873 51
" "				1871			1,136 54	1,280 36
" "				1872			1,285 84	1,539 02
" "				1873		1,939 46	1,106 80	1,393 63
" "				1874		540 11	2,199 64	1,264 40
" "				1875	12,753 27		2,614 90	7,208 63
" "				1876	32,627 71		1,859 20	4,506 68
" "				1877	24,935 85		1,952 14	4,033 72
" "				1878	30,003 08		1,982 65	1,756 93
" "				1879	14,618 85		2,057 32	541 95
" "				1880	22,113 02		2,202 03	3,259 70
" "				1881	3,054 68		2,152 57	1,704 71
" "				1882	69,042 76		2,553 02	3,257 92
" "				1883	193,158 36		2,611 30	2,343 99
" "				1884	172,959 95		2,569 86	3,448 83
" "				1885	142,006 25		2,775 32	2,725 49
" "				1886	93,679 57		2,618 60	4,042 04
" "				1887	129,681 67		2,611 90	5,803 01
" "				1888	45,276 08	6,054 10	2,537 41	1,499 96
" "				1889	18,910 55	1,372 59	2,505 61	1,380 75
" "				1890	24,786 33		2,569 22	1,730 79
" "				1891	6,151 14		2,571 04	1,525 51
" "				1892		8,173 69	2,505 69	1,503 56
" "				1893		25,471 61	2,571 28	1,666 21
" "				1894		6,521 88	2,581 08	2,800 03
" "				1895		3,497 56	2,640 00	2,799 63
" "				1896		3,694 33	2,508 14	3,025 91
" "				1897			2,495 54	4,993 89
" "				1898			2,357 51	1,688 12
" "				1899			1,904 10	1,699 44
Total.....					*1,170,215 63	57,265 33	67,877 37	78,730 79

\* Included in total cost of Ottawa River Works, see page 19.

Original construction. ....	\$ 134,456 51
Enlargement, including new lock.....	1,035,759 12
	<u>\$ 1,170,215 63</u>

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—Con.

CARILLON AND GRENVILLE CANAL.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Imperial Government. ....		*			
Government expenditure prior to Confederation .....		63,053 64			
"                    since                    " .. 1868 .....	1868		19,817 22	6,301 88	8,911 28
"                    "                    " .. 1869 .....	1869			6,549 38	10,157 42
"                    "                    " .. 1870 .....	1870		4,167 96	6,617 81	9,852 09
"                    "                    " .. 1871 .....	1871		23,119 37	8,676 90	8,218 24
"                    "                    " .. 1872 .....	1872	165,257 28		8,324 51	17,235 31
"                    "                    " .. 1873 .....	1873	133,199 10	3,051 38	10,068 28	8,781 50
"                    "                    " .. 1874 .....	1874	245,258 38		10,710 88	10,605 82
"                    "                    " .. 1875 .....	1875	339,864 76		10,378 57	18,520 44
"                    "                    " .. 1876 .....	1876	326,203 16		10,764 38	11,475 96
"                    "                    " .. 1877 .....	1877	245,738 04		11,050 27	10,304 06
"                    "                    " .. 1878 .....	1878	22,676 20		11,401 30	5,082 72
"                    "                    " .. 1879 .....	1879	243,141 24		11,501 52	7,629 98
"                    "                    " .. 1880 .....	1880	281,514 27		11,959 14	7,625 54
"                    "                    " .. 1881 .....	1881	336,707 53		13,059 18	8,076 91
"                    "                    " .. 1882 .....	1882	433,084 39		14,387 49	7,582 68
"                    "                    " .. 1883 .....	1883	433,575 10		17,479 58	8,310 02
"                    "                    " .. 1884 .....	1884	399,267 16		17,393 91	7,918 42
"                    "                    " .. 1885 .....	1885	157,187 72		19,702 30	10,429 26
"                    "                    " .. 1886 .....	1886	104,973 24	75 00	20,597 82	9,303 31
"                    "                    " .. 1887 .....	1887	20,747 11		20,011 36	10,554 41
"                    "                    " .. 1888 .....	1888	38,996 29		21,531 12	10,036 62
"                    "                    " .. 1889 .....	1889	298 17		22,098 88	10,135 66
"                    "                    " .. 1890 .....	1890	17 58	4,526 61	15,896 16	7,582 38
"                    "                    " .. 1891 .....	1891		4,395 25	21,230 22	10,796 68
"                    "                    " .. 1892 .....	1892	34,585 64	15,036 48	17,458 69	8,620 15
"                    "                    " .. 1893 .....	1893	207 00	42,298 74	16,762 71	10,669 28
"                    "                    " .. 1894 .....	1894	385 55	20,034 94	14,144 98	11,620 09
"                    "                    " .. 1895 .....	1895		5,963 76	15,453 21	12,303 25
"                    "                    " .. 1896 .....	1896	3,850 31		13,995 69	12,161 10
"                    "                    " .. 1897 .....	1897	1,908 44	4,939 20	13,780 29	11,607 95
"                    "                    " .. 1898 .....	1898	82,663 37	5,082 03	11,697 81	10,993 61
Total.....		†4,114,360 67	152,507 94	430,985 92	313,102 14

\* Expenditure not given—records relating to same were kept in Ordnance Office at Montreal and were destroyed by fire in 1852.

† Included in total cost of Ottawa River Works, see page 19, cost of enlargement \$4,051,307.03.

LEONARD SHANNON,  
Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



STATEMENTS showing the amount expended on Construction, Renewals, &c.—*Con.*

CULBUTE LOCK AND DAM.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure since Confederation.	1868	.....	.....	.....	.....
" " "	1869	.....	.....	.....	.....
" " "	1870	.....	.....	.....	.....
" " "	1871	.....	.....	.....	.....
" " "	1872	.....	.....	.....	.....
" " "	1873	.....	835 53	.....	.....
" " "	1874	.....	38,388 99	.....	.....
" " "	1875	63,659 29	.....	.....	.....
" " "	1876	76,842 44	.....	.....	.....
" " "	1877	56,081 87	.....	.....	.....
" " "	1878	5,933 53	.....	.....	.....
" " "	1879	20,694 19	.....	.....	.....
" " "	1880	16,688 20	.....	202 50	259 31
" " "	1881	4,721 62	.....	962 85	.....
" " "	1882	29,567 15	.....	790 00	162 33
" " "	1883	14,249 60	.....	695 00	288 99
" " "	1884	8,151 16	.....	733 50	.....
" " "	1885	19,071 76	.....	730 00	572 75
" " "	1886	26,385 27	.....	730 00	2,396 14
" " "	1887	7,760 88	.....	730 00	967 33
" " "	1888	7,573 99	.....	739 50	730 60
" " "	1889	17,112 01	.....	1,050 00	116 53
" " "	1890	2,818 35	.....	747 83	.....
" " "	1891	2,183 15	9,122 05	745 25	499 91
" " "	1892	.....	1,546 25	736 00	.....
" " "	1893	.....	1,420 65	749 00	13 55
" " "	1894	.....	2,540 14	730 00	494 43
" " "	1895	.....	1,475 26	436 05	434 28
" " "	1896	.....	.....	.....	.....
" " "	1897	.....	.....	.....	.....
" " "	1898	.....	.....	.....	100 00
Total.....		*379,494 46	55,328 87	11,507 48	7,036 15

\* Included in total cost of Ottawa River Works, see page 19.

LEONARD SHANNON,

Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,

OTTAWA, 1st November, 1898.

# Department of Railways and Canals.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

## RIDEAU CANAL.

	Year ending 30th June	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Imperial Government.....		3,911,701 47			
Government expenditure prior to Confederation.....		153,062 60			
" since " ..	1868	166 50	7,298 12	18,397 28	16,475 21
" " " ..	1869			19,250 71	13,140 77
" " " ..	1870		13 16	20,022 37	19,469 33
" " " ..	1871		11,732 98	22,814 58	18,120 52
" " " ..	1872		4,967 50	22,139 48	14,005 32
" " " ..	1873		18,070 97	22,841 51	26,074 49
" " " ..	1874		5,793 16	26,815 44	22,957 40
" " " ..	1875	9,310 85		26,553 37	19,699 81
" " " ..	1876	2,163 96		26,430 77	14,428 25
" " " ..	1877	214 11		25,959 56	14,198 18
" " " ..	1878			26,651 51	11,034 22
" " " ..	1879	7,703 88		26,042 52	7,134 55
" " " ..	1880			26,463 88	11,434 05
" " " ..	1881		133 50	26,024 71	8,627 00
" " " ..	1882			26,915 29	13,860 28
" " " ..	1883		70 65	27,322 81	23,524 84
" " " ..	1884		4,597 50	26,938 95	19,245 02
" " " ..	1885		2,098 76	26,971 32	18,189 55
" " " ..	1886		550 00	27,045 95	35,648 04
" " " ..	1887		20,823 96	29,440 46	18,565 34
" " " ..	1888		18,889 48	33,458 83	25,478 87
" " " ..	1889		6,665 22	33,801 77	18,106 36
" " " ..	1890		21,124 10	34,270 57	18,025 21
" " " ..	1891		20,967 25	34,641 98	21,537 56
" " " ..	1892		31,363 23	35,500 82	21,507 16
" " " ..	1893		24,274 71	35,022 49	18,789 50
" " " ..	1894		14,485 11	34,943 35	16,939 47
" " " ..	1895		31,559 48	33,827 08	19,897 32
" " " ..	1896		21,452 29	34,052 77	30,196 38
" " " ..	1897	10,720 50	19,079 11	31,461 55	29,535 94
" " " ..	1898		13,608 39	30,759 05	26,599 93
Total.....		*4,095,043 87	299,618 63	872,782 73	592,445 87

\*Ottawa River Works.

Ste. Anne's Lock, page 16 .....	\$	1,170,215 63
Carillon and Grenville Canals, page 17 .....		1,114,360 67
Culbute Canal, page 18 .....		379,494 46
Rideau Canal as above.....	\$	4,095,043 87
Less expenditure by Imperial Government.....		3,911,701 47
		183,342 40
Total Ottawa Works (Capital).....	\$	5,847,413 16
Add expenditure on slides and booms prior to Confederation.....	\$	719,247 13
Since Confederation.....		7,243 60
Add expenditure on Chats Canals prior to Confederation.....		482,950 81
Add expenditure in 1881, charged to Miscellaneous, <i>see</i> page 229, part ii Public Accounts.....		1,136 84
Add amount transferred, <i>see</i> page xxxvi Public Accounts, Balance sheet, 1881.....		233,555 85
		1,441,134 23
Less expenditure prior to Confederation, transferred to Income Accounts.....	\$	7,291,547 39
Less expenditure, 1872, on Carillon and Grenville Canal, as shown in Public Accounts Balance Sheet, page xx, under Miscellaneous		320,618 28
		165,257 28
		485,875 56
Agreeing with Balance Sheet, Public Accounts, 1898, page xvi.....	\$	6,805,671 83

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

LEONARD SHANNON,  
*Accountant.*

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

## ST. OURS LOCK.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation	.....	121,537 65			
"                    since	1868			1,532 75	753 74
"                    "      "	1869			1,755 15	1,399 18
"                    "      "	1870			1,458 09	1,006 22
"                    "      "	1871			1,414 48	1,210 98
"                    "      "	1872			1,565 80	1,263 19
"                    "      "	1873			2,076 50	1,575 10
"                    "      "	1874			2,219 13	2,363 42
"                    "      "	1875			1,362 22	1,245 69
"                    "      "	1876			1,403 92	1,601 71
"                    "      "	1877			1,533 40	750 80
"                    "      "	1878			1,556 65	283 77
"                    "      "	1879			1,581 55	456 07
"                    "      "	1880			1,614 01	705 54
"                    "      "	1881			1,741 97	1,299 77
"                    "      "	1882			2,002 71	1,902 41
"                    "      "	1883		17,230 32	2,361 65	2,188 08
"                    "      "	1884		5,279 17	2,315 37	1,494 99
"                    "      "	1885		4,700 64	2,271 57	3,652 63
"                    "      "	1886			2,311 70	4,143 47
"                    "      "	1887			2,175 31	5,864 78
"                    "      "	1888			2,216 04	2,801 17
"                    "      "	1889		17,964 45	2,421 14	2,002 63
"                    "      "	1890		24,571 96	2,138 40	1,935 44
"                    "      "	1891		21,696 74	2,011 08	4,460 16
"                    "      "	1892		3,585 34	2,168 44	1,944 33
"                    "      "	1893			2,136 66	1,994 34
"                    "      "	1894			2,216 68	924 55
"                    "      "	1895			2,161 63	915 50
"                    "      "	1896			2,094 91	1,678 49
"                    "      "	1897			2,135 60	707 06
"                    "      "	1898			2,049 67	692 04
Total .....	.....	*121,537 65	95,028 62	60,004 24	55,217 25

\* Included in total cost of Chambly Canal and River Richelieu, see page 21.

LEONARD SHANNON,  
*Accountant.*DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



Department of Railways and Canals

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—Con.

CHAMBLY CANAL.

	Yearend- ing 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation	1868	634,711 76			
"                    since	1868			8,312 90	9,355 70
"                    "	1869			8,437 22	13,120 97
"                    "	1870			8,934 41	20,180 73
"                    "	1871		2,839 85	10,214 71	22,426 33
"                    "	1872		1,906 40	9,628 50	22,327 99
"                    "	1873		759 00	10,390 44	11,789 27
"                    "	1874		2,810 00	11,675 67	16,427 19
"                    "	1875	2,415 00		12,201 99	16,306 91
"                    "	1876			10,593 14	13,273 56
"                    "	1877	80 00		10,281 78	10,111 32
"                    "	1878			10,413 99	6,022 96
"                    "	1879			11,301 53	8,809 77
"                    "	1880			11,516 22	12,377 74
"                    "	1881			13,950 47	20,705 17
"                    "	1882		31,796 41	16,686 78	16,843 60
"                    "	1883		21,332 36	15,904 38	15,182 24
"                    "	1884		41,640 77	18,448 85	12,003 34
"                    "	1885		21,049 23	18,378 55	13,046 95
"                    "	1886		14,547 27	19,501 28	11,999 77
"                    "	1887		17,911 17	19,053 62	20,071 37
"                    "	1888		65,536 64	20,073 60	11,823 74
"                    "	1889		51,437 87	19,679 22	19,392 18
"                    "	1890		23,221 48	19,655 38	14,399 93
"                    "	1891		43,344 41	19,204 76	11,399 93
"                    "	1892		38,353 99	19,665 22	12,976 48
"                    "	1893		21,127 65	19,310 29	12,451 03
"                    "	1894		8,567 78	19,040 93	11,920 74
"                    "	1895		6,147 63	19,325 49	11,779 12
"                    "	1896		3,694 63	19,349 65	11,801 12
"                    "	1897		12,665 88	18,754 17	13,128 55
"                    "	1898		13,184 68	17,992 90	12,466 51
Less proceeds of sale of piece of land.		637,206 76 150 00			
Total		*637,056 76	443,875 10	467,878 04	435,922 21

\* Chambly Canal and River Richelieu.

Chambly Canal as above.....	\$ 637,056 76
St. Ours Lock, see page 20.....	121,537 65
	\$ 758,594 41
Less amount deducted at Confederation, see Public Accounts, 1868, part i, page 9.	
Government expenditure prior to Confederation.	
Chambly Canal as above.....	\$ 634,711 76
St. Ours Lock, page 20.....	121,537 65
	\$ 756,249 41
Returned as an asset in Public Accounts, 1868.	433,807 83
	\$ 322,441 58
Agreeing with Public Accounts, 1898, page xvi.....	\$ 436,152 83

LEONARD SHANNON,  
Accountant.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

MURRAY CANAL.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation	1868				
" since	1869		400 00		
"	1870				
"	1871				
"	1872				
"	1873				
"	1874				
"	1875				
"	1876				
"	1877				
"	1878				
"	1879				
"	1880				
"	1881				
"	1882	7,135 63			
"	1883	84,071 68			
"	1884	118,187 43			
"	1885	148,902 66			
"	1886	179,704 52			
"	1887	142,563 66			
"	1888	146,754 37			
"	1889	215,326 46			
"	1890	106,760 35		494 31	
"	1891	61,260 49		5,137 03	173 53
"	1892	5,964 22		5,803 48	3,505 15
"	1893	30,838 79		5,499 62	5,341 34
"	1894			5,667 52	5,295 57
"	1895			5,354 97	5,063 49
"	1896			5,409 10	5,410 33
"	1897			5,526 87	3,966 41
"	1898			5,799 94	4,710 23
Total		*1,247,470 26	400 00	44,692 84	33,466 05

\*Agreeing with Public Accounts Balance Sheet, 1898, page xvi.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

TRENT CANAL.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation		309,371 31			
" since	1868				
"	1869				
"	1870				
"	1871				
"	1872				
"	1873				
"	1874				
"	1875				
"	1876				
"	1877				
"	1878				
"	1879				
"	1880	561 50		1,188 92	3,568 89
"	1881			2,489 93	2,233 50
"	1882		5,836 51	2,011 92	8,115 50
"	1883	40,767 16	9,303 66	2,235 50	3,047 42
"	1884	120,393 91	6,198 57	2,208 64	5,264 35
"	1885	121,382 84		3,303 87	4,653 50
"	1886	75,103 30		1,639 75	5,917 88
"	1887	179,541 63		1,938 08	6,008 88
"	1888	114,879 35		1,770 29	5,151 42
"	1889	47,592 13	29,677 92	3,242 05	5,935 94
"	1890	58,644 50	11,522 65	3,450 99	730 55
"	1891	9,826 49	3,164 81	3,803 66	4,888 98
"	1892	4,457 28	6,506 97	3,695 85	4,721 85
"	1893	5,962 47	10,838 90	3,739 86	2,087 17
"	1894	3,412 32	20,403 93	3,785 47	4,988 59
"	1895	53,907 70	21,143 41	4,184 18	3,374 49
"	1896	392,976 08	6,185 75	4,349 34	3,329 97
"	1897	486,575 70	13,880 37	4,965 39	3,497 90
"	1898	351,273 31	8,991 54	5,034 60	4,998 80
Total....		2,376,628 98	153,654 99	59,038 29	82,515 58

Total expenditure on Capital account as above. ....\$ 2,376,628 98

LESS—Expenditure prior to Confederation .....\$ 309,371 31

" Year 1880..... 561 50

309,932 81

Agreeing with Public Accounts Balance Sheet, 1898, page xvi.....\$ 2,066,696 17

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

TAY CANAL.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure since Confederation.	1868				
" " "	1869				
" " "	1870				
" " "	1871				
" " "	1872				
" " "	1873				
" " "	1874				
" " "	1875				
" " "	1876				
" " "	1877				
" " "	1878				
" " "	1879				
" " "	1880				
" " "	1881				
" " "	1882		748 65		
" " "	1883	4,831 80			
" " "	1884	50,878 12			
" " "	1885	92,473 97			
" " "	1886	65,561 51			
" " "	1887	49,617 92			
" " "	1888	54,166 57			
" " "	1889	89,486 18			
" " "	1890	22,226 23		*	*
" " "	1891	17,114 78		*	*
" " "	1892	29,771 64		*	*
" " "	1893			*	*
" " "	1894			*	*
" " "	1895			*	*
" " "	1896			*	*
" " "	1897			*	*
" " "	1898			*	*
Total.....		†476,128 73	748 65	*	*

\*Included in Rideau Canal.  
†Agreeing with Public Accounts, 1898, page xvi.

Cost of Canal as above.....	\$ 476,128 73
Paid in 1896-97 but charged as voted under Rideau Canal Capital—Final	
Estimate, Wm. Davis & Sons.....	10,720 50
Total cost of Tay Canal .....	\$ 486,849 23

LEONARD SHANNON,  
Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

SAULT STE. MARIE CANAL.

	Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure since Confederation.	1868				
" " " "	1869				
" " " "	1870				
" " " "	1871				
" " " "	1872		949 35		
" " " "	1873				
" " " "	1874				
" " " "	1875				
" " " "	1876				
" " " "	1877				
" " " "	1878				
" " " "	1879				
" " " "	1880				
" " " "	1881				
" " " "	1882				
" " " "	1883				
" " " "	1884				
" " " "	1885				
" " " "	1886				
" " " "	1887				
" " " "	1888	8,145 06			
" " " "	1889	34,018 95			
" " " "	1890	176,568 55			
" " " "	1891	325,336 33			
" " " "	1892	341,474 31			
" " " "	1893	589,801 25			
" " " "	1894	1,316,529 29			
" " " "	1895	466,151 50		3,432 73	
" " " "	1896	189,986 59		16,074 70	2,650 17
" " " "	1897	209,561 82		15,381 59	7,671 79
" " " "	1898	21,004 56		14,389 92	8,172 09
Total . . . . .		*3,678,578 21	949 35	49,278 94	18,494 05

Agreeing with Public Accounts, 1898, page xvi.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

STATEMENTS showing the amounts expended on Construction, Renewals, &c.—*Con.*

SOULANGES CANAL.

				Year ending 30th June.	Capital.	Renewals Chargeable to Income.	Staff.	Repairs.
					\$ cts.	\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederat'n.				...	.....	.....	.....	.....
"	since	"	..	1868	.....	.....	.....	.....
"	"	"	..	1869	.....	.....	.....	.....
"	"	"	..	1870	.....	.....	.....	.....
"	"	"	..	1871	.....	.....	.....	.....
"	"	"	..	1872	.....	.....	.....	.....
"	"	"	..	1873	.....	.....	.....	.....
"	"	"	..	1874	.....	.....	.....	.....
"	"	"	..	1875	.....	.....	.....	.....
"	"	"	..	1876	.....	.....	.....	.....
"	"	"	..	1877	.....	.....	.....	.....
"	"	"	..	1878	.....	.....	.....	.....
"	"	"	..	1879	.....	.....	.....	.....
"	"	"	..	1880	.....	.....	.....	.....
"	"	"	..	1881	.....	.....	.....	.....
"	"	"	..	1882	.....	.....	.....	.....
"	"	"	..	1883	.....	.....	.....	.....
"	"	"	..	1884	.....	.....	.....	.....
"	"	"	..	1885	.....	.....	.....	.....
"	"	"	..	1886	.....	.....	.....	.....
"	"	"	..	1887	.....	.....	.....	.....
"	"	"	..	1888	.....	.....	.....	.....
"	"	"	..	1889	.....	.....	.....	.....
"	"	"	..	1890	.....	.....	.....	.....
"	"	"	..	1891	.....	.....	.....	.....
"	"	"	..	1892	54,235 76	.....	.....	.....
"	"	"	..	1893	210,336 24	.....	.....	.....
"	"	"	..	1894	723,380 95	.....	.....	.....
"	"	"	..	1895	752,016 53	.....	.....	.....
"	"	"	..	1896	535,939 07	.....	.....	.....
"	"	"	..	1897	363,126 06	.....	.....	.....
"	"	"	..	1898	1,016,401 00	.....	.....	.....
Total.....				.....	*3,655,435 61	.....	.....	.....

\* Included in total cost of St. Lawrence River and Canals, see part ii, page 9.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



Department of Railways and Canals.

STATEMENT showing amount expended on Construction and Enlargement of Canals,  
to 30th June, 1898.

Canal.	Construction.	Enlargement.	Total.
	\$ cts.	\$ cts.	\$ cts.
St. Peters.....	248,762 84	399,784 30	648,547 14
Lachine.....	2,589,532 85	8,035,209 33	10,624,742 18
Beauharnois .....	1,636,690 26	.....	1,636,690 26
St. Lawrence River and Canals.....	18,442 85	1,352,575 04	1,371,017 89
Lake St. Louis.....	.....	192,458 69	192,458 69
Lake St. Francis.....	.....	3,420 00	3,420 00
Cornwall .....	1,945,624 73	4,579,734 27	6,525,359 00
Williamsburg { Farran's Point .....	.....	239,155 20	5,778,580 10
Galops.....	.....	2,398,650 94	
Rapide Plat.....	.....	1,817,631 79	
Williamsburg { Williamsburg .....	1,320,655 54	2,486 63	23,771,635 76
Welland.....	7,693,824 03	16,077,811 73	
Ste. Anne's .....	134,456 51	1,035,759 12	
Carillon and Grenville.....	63,053 64	4,051,307 03	4,114,360 67
Culbute.....	379,494 46	.....	379,494 46
Rideau .....	4,095,043 87	.....	4,095,043 87
St. Ours.....	121,537 65	.....	121,537 65
Chambly.....	637,056 76	.....	637,056 76
Murray.....	1,247,470 26	.....	1,247,470 26
Trent.....	2,376,628 98	.....	2,376,628 98
Tay .....	476,128 73	.....	476,128 73
Sault Ste. Marie .....	3,678,578 21	.....	3,678,578 21
Soulanges .....	3,655,435 61	.....	3,655,435 61
	32,318,417 78	40,185,984 07	72,504,401 85

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

\*RECAPITULATION—EXPENDITURE on Canals, also showing Revenue received.

	Year ending 30th June.	Capital.	Income.	Staff.	Repairs.	Revenue received.
		\$	cts.	\$	cts.	\$
		cts.				cts.
Government expenditure prior to Confederation, including Imperial Government	1868	20,593,866 13	98,378 46	113,084 50	101,646 44	403,879 19
Government expenditure since Confederation.	1869	33,784 06	95,347 79	116,069 76	118,579 31	400,263 32
"	1870	126,898 20	55 00	120,403 02	150,176 70	414,687 02
"	1871		90,355 96	135,040 81	140,467 52	488,538 76
"	1872	255,645 75	116,429 54	124,137 09	152,086 25	466,847 52
"	1873	256,547 27	33,289 27	124,581 18	186,573 13	486,433 26
"	1874	1,189,591 91	127,369 55	167,194 40	213,613 86	510,755 99
"	1875	1,714,830 37	51,037 05	168,401 21	203,226 85	414,979 59
"	1876	2,388,733 46	479 00	178,411 80	190,578 45	390,337 04
"	1877	4,131,374 30	810 75	179,661 40	138,448 51	390,857 37
"	1878	3,843,338 62	22 30	187,521 31	122,251 60	373,814 17
"	1879	3,064,098 61		191,892 44	115,349 99	337,675 13
"	1880	2,123,366 34		195,039 33	147,167 52	341,598 14
"	1881	2,075,891 65	7,246 69	197,573 62	154,653 63	361,558 17
"	1882	1,593,174 09	55,025 03	224,572 61	187,399 02	325,231 54
"	1883	1,763,001 97	62,503 14	260,415 01	178,617 86	361,604 01
"	1884	1,577,295 42	60,993 99	280,657 29	192,219 38	372,561 69
"	1885	1,504,621 47	58,297 59	280,226 20	201,708 47	321,289 47
"	1886	1,333,324 80	31,984 02	282,323 63	198,251 97	328,977 43
"	1887	1,783,698 16	65,983 06	285,172 62	198,888 84	321,784 88
"	1888	1,033,118 34	120,561 59	292,458 76	201,928 93	317,902 04
"	1889	972,918 43	162,015 49	301,040 23	240,261 36	333,188 90
"	1890	1,026,364 24	146,853 54	290,516 63	176,089 00	354,816 92
"	1891	1,318,092 15	165,843 87	294,562 12	204,768 45	349,431 90
"	1892	1,437,149 30	194,129 61	293,115 58	231,089 54	324,475 24
"	1893	2,069,573 30	196,185 84	291,588 97	204,759 39	357,089 87
"	1894	3,027,164 19	109,216 33	294,446 34	179,630 13	387,788 97
"	1895	2,452,273 65	216,057 58	281,477 04	164,033 71	339,890 49
"	1896	2,258,778 97	85,820 49	292,121 05	209,321 60	339,538 72
"	1897	2,341,016 16	101,205 74	287,970 36	178,385 47	384,780 53
"	1898	3,207,249 79	82,400 55	280,872 44	203,478 86	407,602 81
Total		72,504,401 85	2,535,898 82	7,045,545 75	5,485,651 74	11,710,240 08

\* This does not include expenditure which has been charged to Canals—General—but amounts expended on specified Canals.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

LEONARD SHANNON,  
Accountant.

Department of Railways and Canals

HYDRAULIC AND OTHER RENTS.

Balances due 1st July, 1897.	Accrued during the Year ended 30th June, 1898.	Totals.		Abatement.	Deposited to the Credit of the Receiver General.	Balances due 30th June, 1898.	Totals.
\$ cts.	\$ cts.	\$ cts.		\$ cts.	\$ cts.	\$ cts.	\$ cts.
28,307 26	8,343 81	36,651 07	Welland Canal.....	304 45	8,325 66	28,020 96	36,651 07
371 00	708 00	1,079 00	Williamsburg Canal .....		298 00	781 00	1,079 00
1,337 50	5,190 00	6,527 50	Cornwall .....		4,155 00	2,372 50	6,527 50
6,706 33	2,563 00	9,269 33	Beauharnois .....		1,771 50	7,497 83	9,269 33
17,782 04	26,120 22	43,902 26	Lachine .....	457 97	26,333 68	17,105 61	43,902 26
361 84	169 00	530 84	Chambly .....		144 00	386 84	530 84
2,058 09	2,833 85	4,891 94	Rideau .....		2,863 55	2,028 39	4,891 94
72 00	55 00	127 00	Trent Valley .....		3 00	124 00	127 00
.....	25 00	25 00	Sault Ste. Marie .....		20 00	5 00	25 00
100 00	139 00	239 00	Carillon & Grenville Canal. ....		131 00	108 00	239 00
4 00	.....	4 00	Sundry canals. ....		.....	4 00	4 00
57,100 06	46,146 88	103,246 94	Totals.....	762 42	44,050 39	58,434 13	103,246 94

LEONARD SHANNON,  
Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



CANALS, 1897-98.

DR.				COLLECTORS of Canal Tolls in Account with Revenue.				CR.			
CANAL REVENUE.				Collection Divisions.	Total.	DEPOSITS TO THE CREDIT OF THE RECEIVER GENERAL.		Total.	Cost of Staff, Repairs and Offices of Collection Chargeable to Revenue.		
Tolls.	Wharfage and Storage.	Fines.	Other Receipts.			On Account Canal Revenue.	On Account Hydraulic Rents.			\$	cts.
\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
144,961 35	...	60 00	39 46	145,060 81	...	145,060 81	1,082 00	146,142 81	147,615 50	...	...
59,059 53	...	35 00	58 92	59,153 45	...	59,153 45	1,791 40	60,944 85	3,320 59	...	...
485 88	...	...	...	485 88	...	485 88	240 00	725 88	2,272 11	...	...
730 28	...	27 00	...	757 28	...	757 28	5,207 26	5,964 54	779 41	...	...
46 27	...	...	...	46 27	...	46 27	5 00	51 27	199 92	...	...
205,283 31	...	122 00	98 38	205,503 69	...	205,503 69	8,325 66	213,829 35	130 04	...	...
2,242 85	...	30 00	...	2,272 85	...	2,272 85	1,771 50	4,044 35	154,317 57	...	...
31,413 38	...	30 00	...	31,443 38	...	31,443 38	4,155 00	35,598 38	179,751 66	...	...
433 28	...	...	...	433 28	...	433 28	298 00	731 28	989 61	...	...
2,694 07	10 05	...	763 14	3,467 26	...	3,467 26	...	3,467 26	1,751 21	...	...
28,494 31	2,420 40	5 00	15,773 15	46,692 86	...	46,692 86	26,338 68	73,031 54	453 80	...	...
11,465 50	...	...	...	11,465 50	...	11,465 50	...	11,465 50	2,563 57	...	...
76,743 39	2,430 45	65 00	16,536 29	95,775 13	...	95,775 13	32,563 18	128,338 31	7,409 87	...	...
...	...	...	...	...	...	...	...	...	1,187 89	...	...
10,193 09	...	...	...	10,193 09	...	10,193 09	70 00	10,263 09	194,107 61	...	...
10,965 01	...	...	...	10,965 01	...	10,965 01	74 00	11,039 01	33,201 12	...	...
589 97	...	...	...	589 97	...	589 97	...	589 97	1,542 32	...	...
21,748 07	...	...	...	21,748 07	...	21,748 07	144 00	21,892 07	1,706 00	...	...
...	...	...	...	...	...	...	...	...	614 10	...	...
26,411 85	...	...	...	26,411 85	...	26,411 85	...	26,411 85	37,063 54	...	...
3,334 15	...	...	8 00	3,342 15	...	3,342 15	105 00	3,447 15	26,662 16	...	...
503 97	...	...	...	503 97	...	503 97	26 00	529 97	458 33	...	...
1,001 41	...	...	...	1,001 41	...	1,001 41	...	1,001 41	742 60	...	...
31,251 38	...	...	8 00	31,259 38	...	31,259 38	131 00	31,390 38	790 36	...	...
...	...	...	...	...	...	...	...	...	28,653 45	...	...

Department of Railways and Canals

4,532 22	35 50	123 00	4,711 72	2,507 35	7,219 07	59,099 58
932 68			952 68	292 50	1,245 18	2,465 76
567 93		15 00	582 93	63 70	646 63	490 44
6,073 83	35 50	138 00	6,247 33	2,863 55	9,110 88	368 85
2,958 94		8 00	2,966 94			62,424 63
2,958 94		8 00	2,966 94			3,239 10
692 51			692 51		2,966 94	93 33
692 51			692 51		2,966 94	3,332 43
42 74			42 74			10,978 17
482 86			566 86		692 51	389 17
189 62		84 00	237 62			11,367 43
69 90		48 00	69 90			10,053 40
361 58		4 00	365 58	3 00		30 24
118 47			118 47			14 15
1,265 17		136 00	1,401 17	3 00	1,404 17	24 62
				20 00	20 00	
						100 00
						8,575 37
						188 87
						1,021 21
						5,275 63
346,016 60	2,465 95	187 00	365,594 22	44,050 39	409,644 61	540,625 72
					1,981 80	
					407,662 81	

LEONARD SHANNON,  
Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

STATEMENT showing Refunds of Canal Tolls paid during the Year ending 30th June, 1898.

Date.	To Whom Paid.	Refund of Tolls on	Canals.	Amount.	Total.
1897.				\$ cts.	\$ cts
Aug. 16	Kingston and Montreal Forwarding Company	Coal	St. Lawrence	334 65	
" 26	J. P. Tett & Bros.	Lumber	Rideau	9 45	
Sept. 2	Kingston and Montreal Forwarding Company	Grain	Cornwall	194 00	
Oct. 18	Kingston and Montreal Forwarding Company	Salt and iron	Lachine	3 46	
" 18	Edwardsburg Starch Company	Corn	Williamsb'g.	142 80	
Dec. 2	A. B. Hopkins	"	St. Lawrence	10 00	
" 2	Thos. Myles & Sons	Iron	"	13 60	
" 11	Montreal Transportation Co.	Coal	"	100 92	
" 11	Hall & Eligh		Rideau	53 46	
" 16	Alexandre Laplante	Lumber and cement	St. Lawrence & Grenville	97 04	
1898.					
Jan. 3	Montreal Transportation Co.	Coal	St. Lawrence	22 91	
" 3	McArthur Bros	Timber	Welland	30 00	
" 3	J. D. Vanalstine	Cement	"	39 58	
Feb. 12	Canadian Forwarding and Export Company	Cement and rails	St. Lawrence	103 69	
Mar. 1	Canadian Forwarding and Export Company	"	"	8 31	
May 13	Montreal Transportation Co.	Coal	"	95 27	
" 20	"	"	"	98 61	
June 15	Kingston and Montreal Forwarding Company	"	"	174 75	
" 29	Kingston and Montreal Forwarding Company	"	"	38 80	
July 2	Joseph Filion	Floats	Rideau	53 75	
" 7	Canadian Forwarding and Export Company	"	St. Lawrence	119 70	
" 12	Canadian Forwarding and Export Company	Lumber	"	111 93	
" 20	Canadian Forwarding and Export Company	Cement	"	102 79	
Total					1,959 47

LEONARD SHANNON,  
DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Accountant.

STATEMENT showing Refunds of Rentals paid during the Year 1897-98.

Date.		Amount.	Total.
1897.		\$ cts.	\$ cts
Oct. 6	H. E. Mason	8 33	
1898.			
May 23	John Sheridan	14 00	
Total			22 33

LEONARD SHANNON,  
DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Accountant.



Department of Railways and Canals.

INTERCOLONIAL RAILWAY.

(Including amounts paid to Nova Scotia Railway and European and North American Railway, N.B.)

	Year.	Construction.	Income.	Working Expenses including Windsor Branch Ry.	Revenue received, including Windsor Branch Ry.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Expenditure prior to Confederation.....		10,766,725 54			
" since ".....	1868	483,353 65		359,961 08	420,752 58
" ".....	1869	282,615 18		387,548 47	455,022 76
" ".....	1870	1,729,381 49		445,208 75	471,245 09
" ".....	1871	2,916,782 13		442,993 31	565,713 52
" ".....	1872	5,131,141 51		595,076 22	622,900 56
" ".....	1873	5,201,450 37		1,011,892 60	703,458 26
" ".....	1874	3,614,898 81		1,847,175 24	893,430 17
" ".....	1875	3,426,099 55		1,532,589 62	861,593 43
" ".....	1876	1,108,321 59		1,277,197 79	848,861 46
" ".....	1877	1,318,352 19		1,661,673 55	1,154,445 35
" ".....	1878	408,816 74		1,811,273 56	1,378,946 78
" ".....	1879	226,639 19		2,010,183 22	1,294,099 69
" ".....	1880	2,048,014 60		1,607,956 70	1,520,310 45
" ".....	1881	608,732 80		1,780,353 53	1,777,856 76
" ".....	1882	585,568 79		2,080,592 37	2,100,315 85
" ".....	1883	1,616,632 96		2,383,477 20	2,395,034 99
" ".....	1884	1,405,377 52		2,366,719 95	2,376,666 19
" ".....	1885	1,195,363 08		2,460,229 87	2,392,605 00
" ".....	1886	544,958 17		2,508,473 10	2,406,858 88
" ".....	1887	823,070 86		2,854,158 91	2,621,337 41
" ".....	1888	742,203 09		3,300,481 94	2,937,337 40
" ".....	1889	655,228 13		3,174,785 19	2,923,736 46
" ".....	1890	365,246 48		3,500,455 80	2,958,243 38
" ".....	1891	79,929 34		3,691,273 65	3,007,630 51
" ".....	1892	168,101 77		3,458,891 39	2,978,950 82
" ".....	1893	228,984 79		3,062,207 45	3,099,815 20
" ".....	1894	166,362 43		2,999,317 07	3,020,485 74
" ".....	1895	327,034 51		2,964,940 98	2,979,795 59
" ".....	1896	259,105 23		3,029,304 08	2,994,201 93
" ".....	1897	145,142 00		2,936,789 71	2,906,631 25
" ".....	1898	252,367 20	70,000 00	3,275,830 14	3,154,896 49
Total .....		*48,832,001 69	70,000 00	61,819,012 44	57,316,548 70

\* Including \$296,872.90 charged to "Consolidated Fund."

Total cost of construction as above.....\$ 48,832,001 69

Less amounts transferred from Capital to Consolidated Fund as follows :—

	Nova Scotia Ry.	European and North American Ry.
1868.....	\$ 16,800 99	\$ 11,302 89
1870.....	34,403 45	1,749 21
1871.....	50,405 69	
1873.....	106,899 59	75,311 08
	<u>\$ 208,509 72</u>	<u>\$ 83,363 18</u>
		208,509 72

296,872 90

Cape Breton Railway.....	\$ 48,535,128 79
Oxford and New Glasgow Railway ..	3,860,679 14
Eastern Extension Railway.....	1,949,063 21
	1,324,042 81

Total Capital cost of Intercolonial Railway system. ....\$ 55,668,913 95

Governor General's car "Victoria".....1,290 31

Agreeing with Public Accounts, 1898, page xvi ... \$ 55,670,204 26

LEONARD SHANNON,  
DEPARTMENT OF RAILWAYS AND CANALS, Accountant.  
OTTAWA, 1st November, 1898.

## EASTERN EXTENSION RAILWAY.

	Year.	Capital.	Working Expenses.	Revenue received.
		\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation.....				
"                    since                    "                    .....	1868			
"                    "                    "                    .....	1869			
"                    "                    "                    .....	1870			
"                    "                    "                    .....	1871			
"                    "                    "                    .....	1872			
"                    "                    "                    .....	1873			
"                    "                    "                    .....	1874			
"                    "                    "                    .....	1875			
"                    "                    "                    .....	1876			
"                    "                    "                    .....	1877			
"                    "                    "                    .....	1878			
"                    "                    "                    .....	1879			
"                    "                    "                    .....	1880			
"                    "                    "                    .....	1881			
"                    "                    "                    .....	1882			
"                    "                    "                    .....	1883			
"                    "                    "                    .....	1884	1,284,311 97	10,033 77	30,767 66
"                    "                    "                    .....	1885	2,055 92	78,273 65	73,050 01
"                    "                    "                    .....	1886	183 79	94,756 06	66,893 11
"                    "                    "                    .....	1887		94,254 04	64,107 10
"                    "                    "                    .....	1888		90,954 73	70,552 20
"                    "                    "                    .....	1889	34,235 73	90,719 04	72,436 65
"                    "                    "                    .....	1890		79,102 77	84,658 95
"                    "                    "                    .....	1891	3,255 40	*	†
"                    "                    "                    .....	1892		*	†
"                    "                    "                    .....	1893		*	†
"                    "                    "                    .....	1894		*	†
"                    "                    "                    .....	1895		*	†
"                    "                    "                    .....	1896		*	†
"                    "                    "                    .....	1897		*	†
"                    "                    "                    .....	1898		*	†
Total .....		† 1,324,042 81	538,094 06	462,465 68

\* Included in Intercolonial Railway working expenses. † Included in Intercolonial Railway revenue.  
‡ Included in total cost of Intercolonial Railway system, page 33

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals.

CARLETON BRANCH RAILWAY.

	Year.	Capital.	Working Expenses.	Revenue received.
		\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation.....	1868			
"                    since                    ".....	1869			
"                    "                    ".....	1870			
"                    "                    ".....	1871			
"                    "                    ".....	1872			
"                    "                    ".....	1873			
"                    "                    ".....	1874			
"                    "                    ".....	1875			
"                    "                    ".....	1876			
"                    "                    ".....	1877			
"                    "                    ".....	1878			
"                    "                    ".....	1879			
"                    "                    ".....	1880			
"                    "                    ".....	1881			
"                    "                    ".....	1882			
"                    "                    ".....	1883			
"                    "                    ".....	1884			
"                    "                    ".....	1885			
"                    "                    ".....	1886	85,610 69		
"                    "                    ".....	1887	2,299 62		
"                    "                    ".....	1888	500 17		
"                    "                    ".....	1889			
"                    "                    ".....	1890			
"                    "                    ".....	1891			
"                    "                    ".....	1892			
"                    "                    ".....	1893			
"                    "                    ".....	1894			
"                    "                    ".....	1895			
"                    "                    ".....	1896			
"                    "                    ".....	1897			
"                    "                    ".....	1898			
Total.....		*88,410 48		

\*56 Victoria, cap. 6, transferred the Carleton Branch Railway to the city of St. John, N.B., for the sum of \$40,000, which sum was paid in March, 1893, to the Receiver General.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



CAPE BRETON RAILWAY.

	Year.	Capital.	Working Expenses.
		\$ cts.	\$ cts.
Government expenditure prior to Confederation.....	1868		
" since " .....	1869		
" " " .....	1870		
" " " .....	1871		
" " " .....	1872		
" " " .....	1873		
" " " .....	1874		
" " " .....	1875		
" " " .....	1876		
" " " .....	1877		
" " " .....	1878		
" " " .....	1879		
" " " .....	1880		
" " " .....	1881		
" " " .....	1882		
" " " .....	1883		
" " " .....	1884		
" " " .....	1885		
" " " .....	1886		
" " " .....	1887	76,501 89	
" " " .....	1888	689,450 50	
" " " .....	1889	1,083,276 60	
" " " .....	1890	1,170,523 62	
" " " .....	1891	521,441 62	
" " " .....	1892	99,936 96	
" " " .....	1893	59,982 74	
" " " .....	1894	158,770 61	
" " " .....	1895	*	
" " " .....	1896	*	
" " " .....	1897	405 00	
" " " .....	1898	389 60	
Total.....		\$3,860,679 14	†

\* Included in Intercolonial Railway capital. † Included in Intercolonial Railway working expenses.  
§ Included in total cost of Intercolonial Railway system, see page 33.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals.

OXFORD AND NEW GLASGOW RAILWAY.

	Year.	Capital.	Working Expenses.
		\$ cts.	\$ cts.
Government expenditure prior to Confederation. . . . .	1868		
"                    since                    " . . . . .	1869		
"                    "                    " . . . . .	1870		
"                    "                    " . . . . .	1871		
"                    "                    " . . . . .	1872		
"                    "                    " . . . . .	1873		
"                    "                    " . . . . .	1874		
"                    "                    " . . . . .	1875		
"                    "                    " . . . . .	1876		
"                    "                    " . . . . .	1877		
"                    "                    " . . . . .	1878		
"                    "                    " . . . . .	1879		
"                    "                    " . . . . .	1880		
"                    "                    " . . . . .	1881		
"                    "                    " . . . . .	1882		
"                    "                    " . . . . .	1883		
"                    "                    " . . . . .	1884		
"                    "                    " . . . . .	1885		
"                    "                    " . . . . .	1886		
"                    "                    " . . . . .	1887		
"                    "                    " . . . . .	1888	280,932 35	
"                    "                    " . . . . .	1889	840,553 57	
"                    "                    " . . . . .	1890	434,074 60	
"                    "                    " . . . . .	1891	220,886 39	
"                    "                    " . . . . .	1892	48,745 23	
"                    "                    " . . . . .	1893	7,922 80	
"                    "                    " . . . . .	1894	112,382 75	
"                    "                    " . . . . .	1895	*	
"                    "                    " . . . . .	1896	*	
"                    "                    " . . . . .	1897	3,565 52	
"                    "                    " . . . . .	1898		
Total . . . . .		‡ 1,949,063 21	†

\*Included in Intercolonial Railway capital. †Included in Intercolonial Railway working expenses.  
‡ Included in total cost of Intercolonial Railway system, page 33.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

MONTREAL AND EUROPEAN SHORT LINE RAILWAY.

	Year.	Construction.	Working Expenses.	Revenue received.
		\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation.....	1868	.....	.....	.....
"                    since                    "	1869	.....	.....	.....
"                    "                    "	1870	.....	.....	.....
"                    "                    "	1871	.....	.....	.....
"                    "                    "	1872	.....	.....	.....
"                    "                    "	1873	.....	.....	.....
"                    "                    "	1874	.....	.....	.....
"                    "                    "	1875	.....	.....	.....
"                    "                    "	1876	.....	.....	.....
"                    "                    "	1877	.....	.....	.....
"                    "                    "	1878	.....	.....	.....
"                    "                    "	1879	.....	.....	.....
"                    "                    "	1880	.....	.....	.....
"                    "                    "	1881	.....	.....	.....
"                    "                    "	1882	.....	.....	.....
"                    "                    "	1883	.....	.....	.....
"                    "                    "	1884	.....	.....	.....
"                    "                    "	1885	49,587 45	.....	.....
"                    "                    "	1886	135,214 38	.....	.....
"                    "                    "	1887	24,157 32	.....	.....
"                    "                    "	1888	397 35	.....	.....
"                    "                    "	1889	.....	.....	.....
"                    "                    "	1890	.....	.....	.....
"                    "                    "	1891	124,568 23	.....	.....
"                    "                    "	1892	.....	.....	.....
"                    "                    "	1893	.....	.....	.....
"                    "                    "	1894	17 99	.....	.....
"                    "                    "	1895	.....	.....	.....
"                    "                    "	1896	.....	.....	.....
"                    "                    "	1897	.....	.....	.....
"                    "                    "	1898	.....	.....	.....
Total.....		*333,942 72	.....	.....

\*Agreeing with Public Accounts, 1898, page xvi.

LEONARD SHANNON,

Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,

OTTAWA, 1st November, 1898.



# Department of Railways and Canals.

## PRINCE EDWARD ISLAND RAILWAY.

	Year.	Construction.	Working Expenses.	Revenue received.
		\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation.....	1874	3,114,735 11	750 00	
"                    since                    "      ....	1875	46,086 63	49,344 62	24,493 99
"                    "                    "      ....	1876	42,546 10	219,930 43	118,060 96
"                    "                    "      ....	1877	200,000 00	228,595 25	130,664 92
"                    "                    "      ....	1878	6,551 86	221,599 49	135,899 60
"                    "                    "      ....	1879	40,129 05	223,313 12	125,855 91
"                    "                    "      ....	1880	16,539 82	164,640 55	113,851 11
"                    "                    "      ....	1881		203,122 88	131,131 43
"                    "                    "      ....	1882	402 03	228,259 97	137,267 54
"                    "                    "      ....	1883	57,186 02	252,808 41	146,170 42
"                    "                    "      ....	1884	130,663 38	236,428 13	144,504 12
"                    "                    "      ....	1885	76,956 56	211,207 01	158,588 06
"                    "                    "      ....	1886	4,668 33	216,744 34	155,584 36
"                    "                    "      ....	1887	5,800 00	204,237 45	155,303 37
"                    "                    "      ....	1888		229,639 95	158,363 62
"                    "                    "      ....	1889		247,559 44	171,369 56
"                    "                    "      ....	1890		266,485 85	160,971 78
"                    "                    "      ....	1891		257,990 08	174,258 05
"                    "                    "      ....	1892	8,300 49	289,706 38	157,442 69
"                    "                    "      ....	1893		226,422 17	162,690 42
"                    "                    "      ....	1894		226,891 06	158,533 83
"                    "                    "      ....	1895		232,905 19	149,654 78
"                    "                    "      ....	1896		225,138 56	146,476 54
"                    "                    "      ....	1897		240,489 90	153,443 13
"                    "                    "      ....	1898	17,541 88	231,418 74	158,950 61
Total.....		3,768,107 26	5,335,628 97	3,429,530 80

LEONARD SHANNON,  
Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

CANADIAN PACIFIC RAILWAY.

	Year.	Construction, including Subsidy of \$25,000,000.	Working Expenses.	Revenue received.
		\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation.....				
"                    since                    "      ...	1868			
"                    "                    "      ...	1869			
"                    "                    "      ...	1870			
"                    "                    "      ...	1871	30,148 32		
"                    "                    "      ...	1872	489,428 16		
"                    "                    "      ...	1873	561,818 44		
"                    "                    "      ...	1874	310,224 88		
"                    "                    "      ...	1875	1,546,241 67		
"                    "                    "      ...	1876	3,346,567 06		
"                    "                    "      ...	1877	1,691,149 97		
"                    "                    "      ...	1878	2,228,373 13		
"                    "                    "      ...	1879	2,240,285 47		
"                    "                    "      ...	1880	4,044,522 72	78,892 01	104,975 69
"                    "                    "      ...	1881	4,968,503 93	236,944 98	291,498 06
"                    "                    "      ...	1882	(1) 4,589,075 79	1,786 20	
"                    "                    "      ...	1883	(2) 10,033,800 04	266 09	
"                    "                    "      ...	1884	(3) 11,192,722 02	327 02	
"                    "                    "      ...	1885	(4) 9,900,281 53		
"                    "                    "      ...	1886	(5) 3,672,584 81		
"                    "                    "      ...	1887	(6) 915,057 49		
"                    "                    "      ...	1888	52,098 65		
"                    "                    "      ...	1889	86,716 07		
"                    "                    "      ...	1890	40,980 54		
"                    "                    "      ...	1891	37,367 00		
"                    "                    "      ...	1892	66,211 39		
"                    "                    "      ...	1893	413,836 49		
"                    "                    "      ...	1894	146,539 87		
"                    "                    "      ...	1895	49,209 77		
"                    "                    "      ...	1896	65,669 49		
"                    "                    "      ...	1897	14,054 50		
"                    "                    "      ...	1898	692 17		
Total.....		*62,734,161 37	318,216 30	396,473 75

\*Agrees with Public Accounts balance sheet, 1897-98, page xvi.

(1) Including.....	\$ 2,210,000 00	on account subsidy.
(2) " .....	5,323,076 60	"
(3) " .....	7,254,208 27	"
(4) " .....	6,862,201 00	"
(5) " .....	2,890,427 00	"
(6) " .....	460,087 13	"
	*\$25,000,000 00	

\*See also Statement No. 3, page 45, for this expenditure.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals.

ANNAPOLIS AND DIGBY RAILWAY.

	Year.	Capital.	Working Expenses.
		\$ cts.	\$ cts.
overnment expenditure prior to Confederation.....	1868		
"                    since                    ".....	1869		
"                    "                    ".....	1870		
"                    "                    ".....	1871		
"                    "                    ".....	1872		
"                    "                    ".....	1873		
"                    "                    ".....	1874		
"                    "                    ".....	1875		
"                    "                    ".....	1876		
"                    "                    ".....	1877		
"                    "                    ".....	1878		
"                    "                    ".....	1879		
"                    "                    ".....	1880		
"                    "                    ".....	1881		
"                    "                    ".....	1882		
"                    "                    ".....	1883		
"                    "                    ".....	1884		
"                    "                    ".....	1885		
"                    "                    ".....	1886		
"                    "                    ".....	1887		
"                    "                    ".....	1888		
"                    "                    ".....	1889	9,847 27	
"                    "                    ".....	1890	381,942 75	
"                    "                    ".....	1891	196,869 36	
"                    "                    ".....	1892	26,129 39	
"                    "                    ".....	1893	2,190 62	
"                    "                    ".....	1894	1,675 36	
"                    "                    ".....	1895	570 55	
"                    "                    ".....	1896		
"                    "                    ".....	1897	41,457 29	
"                    "                    ".....	1898		
Total.....		*660,683 09	

\*Of this amount Parliament voted under 52 Vic., cap. 8, the sum of \$500,000 as a subsidy to the Western Counties Railway which is also shown in the statement of subsidies, page 45.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



STATEMENT showing amount expended on Capital Account on Railways.

Railways.				
	\$	cts.	\$	cts.
Intercolonial .....	48,535,128	79		
Cape Breton .....	3,860,679	14		
Oxford and New Glasgow .....	1,949,063	21		
Eastern Extension .....	1,324,042	81		
			55,668,913	95
Carleton Branch .....			48,410	48
Montreal and European Short Line .....			333,942	72
Prince Edward Island .....			3,768,107	26
Canadian Pacific .....			62,734,161	37
Annapolis and Digby .....			660,683	09
Governor General's car "Victoria" .....			1,290	31
Total .....			123,215,509	18
<i>Memo. re Recapitulation—Railways.</i>				
Total cost as per statement above .....			123,215,509	18
Add amounts transferred from Capital to Consolidated Fund, Intercolonial Railway, see statement page 33 .....			296,872	90
Agreeing with total cost of construction, as per statement page 43 .....			123,512,382	08

LEONARD SHANNON,  
Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

Department of Railways and Canals

RECAPITULATION—RAILWAYS.

	Year.	Construction.	Working Expenses.	Revenue received.
		\$ cts.	\$ cts.	\$ cts.
Government expenditure prior to Confederation .....		13,881,460 65	.....	.....
"                    since                      "	1868	483,353 65	359,961 08	420,752 58
"                    "                    "	1869	282,615 18	387,548 47	455,022 76
"                    "                    "	1870	1,729,381 49	445,208 75	471,245 09
"                    "                    "	1871	2,946,930 45	442,993 31	565,713 52
"                    "                    "	1872	5,620,569 67	595,076 22	622,900 56
"                    "                    "	1873	5,763,268 81	1,011,892 60	703,458 26
"                    "                    "	1874	3,925,123 69	1,847,925 24	893,430 17
"                    "                    "	1875	5,018,427 85	1,581,934 24	886,087 42
"                    "                    "	1876	4,497,434 75	1,497,128 22	966,922 42
"                    "                    "	1877	3,209,502 16	1,890,268 80	1,285,110 27
"                    "                    "	1878	2,643,741 73	2,032,873 05	1,514,846 38
"                    "                    "	1879	2,507,053 71	2,233,496 34	1,419,955 60
"                    "                    "	1880	6,109,077 14	1,851,489 26	1,739,137 25
"                    "                    "	1881	5,577,236 73	2,220,421 39	2,200,486 25
"                    "                    "	1882	5,175,046 61	2,310,638 54	2,237,583 39
"                    "                    "	1883	11,707,619 02	2,636,551 70	2,541,205 41
"                    "                    "	1884	14,013,074 89	2,613,508 87	2,551,937 97
"                    "                    "	1885	11,224,244 54	2,749,710 53	2,624,243 07
"                    "                    "	1886	4,443,220 17	2,819,973 50	2,628,336 35
"                    "                    "	1887	1,846,887 18	3,152,650 40	2,840,747 88
"                    "                    "	1888	1,765,582 11	3,621,076 62	3,166,253 22
"                    "                    "	1889	2,709,857 37	3,513,063 67	3,167,542 67
"                    "                    "	1890	2,392,767 99	3,846,044 42	3,203,874 11
"                    "                    "	1891	1,184,317 34	3,949,263 73	3,181,888 56
"                    "                    "	1892	417,425 73	3,748,597 77	3,136,393 51
"                    "                    "	1893	712,917 44	3,288,629 62	3,262,505 62
"                    "                    "	1894	585,749 01	3,226,208 13	3,179,019 57
"                    "                    "	1895	376,814 83	3,197,846 17	3,129,450 37
"                    "                    "	1896	324,774 72	3,254,442 64	3,140,678 47
"                    "                    "	1897	204,624 31	3,195,959 58	3,060,074 38
"                    "                    "	1898	270,990 85	3,507,248 88	3,313,847 10
Total .....	.....	*123,551,091 77	73,029,631 74	64,510,650 18

* Total amount paid on construction.....	\$123,551,091 77
Less amount received from the City of St. John, N.B., as purchase of the Carleton Branch Railway.....	40,000 00
Total cost of construction.....	\$123,511,091 77
Add expenditure Governor General's car "Victoria".....	1,290 31
	<u>\$123,512,382 08</u>

LEONARD SHANNON,  
Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.

## RECAPITULATION—RAILWAYS AND CANALS.

### EXPENDITURE.

Railways—Capital Account, see statement page 42.....	\$ 123,215,509	18
Canals—	27.....	72,504,401 85
Total cost of Government Railways and Canals, Capital Account.	\$ 195,719,911	03
Railway Subsidies, chargeable to Consolidated Fund as per Statement No. 3, page 45.....	\$ 43,119,222	11
Less subsidies already included in Railways Capital Account (statement page 42) to Canadian Pacific Railway.....	\$ 25,000,000	00
Western Counties Railway.....	500,000	00
	25,500,000	00
	17,619,222	11
* Total expenditure on Railways and Canals, Capital Account, and Railway Subsidies .....	\$ 213,339,133	14

## REVENUE.

Canals, revenue received from July 1st, 1867, to June 30th, 1898. (For details see page 28).....	\$	11,710,240	08
Railways, revenue received from July 1st, 1867, to June 30th, 1898. (For details see page 43).....		64,510,650	18
Total revenue received to July 1st, 1898.....	\$	76,220,890	26
Memo of cost of operating and maintaining Railways and Canals to June 30th, 1898:—			
Canals chargeable to Income.....	\$	2,535,898	82
Less prior to Confederation .....		98,378	46
	\$	2,437,520	36
From Confederation (July 1st, 1867) to June 30th, 1898:—			
Staff .....		7,045,545	75
Repairs.....		5,485,651	74
Total Canals, see statement page 28. ....	\$	14,968,717	85
Railways, Working expenses, see page 43.....		73,029,631	74
Total.....	\$	87,998,349	59

\* This amount does not include the annual subsidy of \$186,600 payable half-yearly for twenty years, dating from the 1st of July, 1889, to the Atlantic and North-west Railway Company ; nor the annual payment of \$119,700 to the Provincial Government of Quebec, being interest at the rate of 5 per cent on the sum of \$2,394,000 granted by 47 Vic., ch. 8 (1884), for the line between Ottawa and Quebec, which sum has now been transferred to the public debt as a liability. (See Public Accounts, 1897-98, p. x.) These items are dealt with by the Finance Department.

LEONARD SHANNON,  
*Accountant.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 1st November, 1898.



## No. 3.

STATEMENT showing Subsidies voted for Railways as to which contracts have been entered into and payments made up to the 30th June, 1898.

This return does not include the Atlantic and North-western Railway.  
60-61 Victoria, Chap. 4, authorizes \$3,000 per mile subsidy if the cost does not average more than \$16,000 per mile, if over that amount a further sum of fifty per cent on so much of the average cost of the mileage subsidized as is in excess of \$16,000 per mile, such subsidy not exceeding in the whole the sum of \$6,400 per mile.



## STATEMENT showing

SUBSIDIES VOTED.				
Authority.	Amount.			
			\$	cts.
46 Vic., cap. 25	}		156,800	00
53 do 2				
45 do 14			384,000	00
46 do 25			80,000	00
48-49 do 59			96,000	00
49 do 10			186,295	00
50-1 do 24			28,800	00
51 do 3			96,000	00
52 do 3			64,000	00
53 do 2			30,000	00
54-5 do 8			5,250	00
57-8 do 4			44,800	00
46 do 25			89,600	00
49 do 10			70,000	00
50-1 do 24			12,800	00
52 do 3			32,000	00
55-6 do 5			64,000	00
47 do 8			272,000	00
51 do 3			41,000	00
53 do 2			24,000	00
46 do 25			115,200	00
47 do 8			76,800	00
50-1 do 24			32,000	00
47 do 8			32,000	00
49 do 10			57,600	00
52 do 3			22,400	00
53 do 2			48,000	00
56 do 2			48,000	00
57-8 do 4			96,000	00
47 do 8			48,000	00
45 do 14				
46 do "				
53 do				
47 do				
48-9				
49				
48-				
51				

International Railway,

Quebec and Lake

Kingston,  
Tamworth

Pontiac

Carleton

Gr





Department of Railways and Canals.

PART III

RAILWAY SUBSIDIES





# Department of Railways and Canals.

No. 1.

## RAILWAY SUBSIDIES.

TABLE of per mile Cash Subsidies paid in aid of Railway Construction, showing amount of subsidy granted for same Railways.

Number.	NAME OF RAILWAY.	ON FOLLOWING NAMED RAILWAYS.				
		No. of miles built up to 30th June, 1898.	No. of miles paid and provided for.	Subsidy paid and available at June 30, 1898.	Subsidy paid to 30th June, 1898.	Subsidy paid to 1st Nov., 1898.
				\$ cts.	\$ cts.	\$ cts.
1	Albert Southern.....	16	16	50,460 00	50,460 00	50,460 00
2	Laie des Chaleurs.....	70	70	620,000 00	620,000 00	620,000 00
3	Beauharnois Junction .....	19 50	19 50	62,400 00	62,400 00	62,400 00
4	Belleville and North Hastings.....	6 84	6 84	21,888 00	21,888 00	21,888 00
5	Brantford, Waterloo and Lake Erie ..	18	18	57,600 00	57,600 00	57,600 00
6	Brockville, Westport and Sault Ste. Marie .....	44 50	44 50	105,200 00	105,200 00	105,200 00
7	Buctouche and Moncton ..	31 75	31 75	101,600 00	101,600 00	101,600 00
8	Canada Atlantic.....	54 05	54 05	282,355 20	282,355 20	282,355 20
9	Canada Central.....	120	120	1,525,250 00	1,525,250 00	1,525,250 00
10	Canada Eastern ..	107	107	342,400 00	342,400 00	342,400 00
11	Canadian Pacific ..	1,905	1,905	25,000,000 00	25,000,000 00	25,000,000 00
12	" (extension)*.....	476 55	515	5,210,000 00	2,033,750 00	3,742,190 00
13	Caraquet ..	67	67	224,000 00	224,000 00	224,000 00
14	Central (of New Brunswick).....	44 50	59 50	185,100 00	75,639 00	137,100 00
15	Cornwallis Valley .....	14	14	44,800 00	44,800 00	44,800 00
16	Columbia and Kootenay .....	27 75	27 75	88,800 00	88,800 00	88,800 00
17	Cumberland ..	14	14	39,850 00	39,850 00	39,850 00
18	Dominion Lime Co .....	4 80	4 80	15,360 00	15,360 00	15,360 00
19	Dominion Coal Co.....	27 44	27 44	87,808 00	87,808 00	87,808 00
20	†Drummond Counties ..	133 03	135 60	433,920 00	287,936 00	287,936 00
21	Elgin, Petitcodiac and Havelock .....	12	12	38,400 00	38,400 00	38,400 00
22	Erie and Huron .....	30	30	96,000 00	96,000 00	96,000 00
23	Esquimalt and Nanaimo ..	71	71	750,000 00	750,000 00	750,000 00
24	Fredericton and St. Mary's Bridge Co.	1 33	1 33	30,000 00	30,000 00	30,000 00
25	Grand Trunk, Georgian Bay and Lake Erie .....	12 42	12 42	39,744 00	39,744 00	39,744 00
26	Great Eastern.....	12 50	12 50	40,345 00	40,345 00	40,345 00
27	†Great Northern.....	54 59	143 59	517,588 00	142,688 00	174,688 00
28	Guelph Junction .....	15 25	15 25	46,000 00	46,000 00	46,000 00
29	Harvey Branch ..	3	3	5,553 57	5,553 57	5,553 57
30	Hereford ..	48 50	48 50	155,200 00	155,200 00	155,200 00
31	Irondale, Bancroft and Ottawa .....	45	50	160,000 00	144,000 00	144,000 00
32	International.....	49	49	156,800 00	156,800 00	156,800 00
33	Joggins .....	12	12	37,500 00	37,500 00	37,500 00
34	Kingston and Pembroke.....	15	15	48,000 00	48,000 00	48,000 00
35	Kingston, Napanee and Western.....	61 35	61 35	208,732 80	208,732 80	208,732 80
36	L'Assomption. ....	3 50	3 50	11,200 00	11,200 00	11,200 00
37	Lake Erie and Detroit River .....	84 05	84 05	338,731 00	338,731 00	338,731 00
38	Lake Temiscamingue Colonization ..	45 84	45 84	310,335 95	310,335 95	310,335 95
39	Leamington and Lake St. Clair .....	16	16	51,200 00	51,200 00	51,200 00
40	Lotbinière and Mégantic.....	30	30	96,000 00	96,000 00	96,000 00
41	Montreal and Sorel.....	44 67	44 67	93,757 57	93,757 57	93,757 57
42	Montreal and Lake Champlain.....	83	83	103,600 00	103,600 00	103,600 00
43	Montreal and Western.....	70	70	361,270 00	361,270 00	361,270 00
44	Montreal and Lake Maskinongé.....	12 90	12 90	41,280 00	41,280 00	41,280 00
45	Montreal and Ottawa.....	60	60	192,000 00	145,600 00	192,000 00
46	Montfort Colonization .....	32 20	33	171,600 00	103,040 00	103,040 00
47	Nakusp and Slocan ..	36 90	38	121,600 00	117,760 00	117,760 00
48	New Brunswick and P.E.I.....	35 45	35 45	113,440 00	113,440 00	113,440 00
Carried forward.....		4,199 16	4,351 08	38,834,669 09	34,893,274 09	36,741,575 09

TABLE of per mile Cash Subsidies granted and paid in aid of Railway Construction, &c.—*Concluded.*

Number.	Name of Railway.	ON FOLLOWING NAMED RAILWAYS.				
		No. of miles built up to 30th June, 1898.	No. of miles paid and provided for.	Subsidy paid and available at June 30, 1898.	Subsidy paid to 30th June, 1898.	Subsidy paid to 1st Nov., 1898.
				\$ cts	\$ cts.	\$ cts.
	Brought forward.....	4,199·16	4,351·08	38,834,669 09	34,893,274 09	36,741,575 09
49	New Glasgow Iron and Coal Co.....	12·45	12·45	39,840 00	39,840 00	39,840 00
50	Northern Pacific Junction.....	110	110	1,320,000 00	1,320,000 00	1,320,000 00
51	Nova Scotia Central.....	73·50	73·50	230,700 00	230,700 00	230,700 00
52	Ontario, Belmont and Northern.....	9·60	10	32,000 00	30,720 00	30,720 00
53	Ontario and Quebec.....	61·25	61·25	196,000 00	196,000 00	196,000 00
54	Orford Mountain.....	26·50	26·50	84,800 00	84,800 00	84,800 00
55	Oshawa Railway and Navn. Co. ....	7	7	22,400 00	22,400 00	22,400 00
56	Ottawa and Gatineau Valley.....	54	54	320,000 00	284,128 00	284,128 00
57	+Ottawa, Arnprior and Parry Sound..	156·13	163	609,600 00	757,632 00	757,632 00
58	Parry Sound Colonization.....	47·75	47·75	152,800 00	152,800 00	152,800 00
59	Pontiac Pacific Junction.....	70	70	307,850 00	193,578 00	193,578 00
60	+Phillipsburg Junction.....	6·75	7·41	23,712 00	21,600 00	21,600 00
61	Pontiac and Renfrew.....	4·25	4·25	13,600 00	13,600 00	13,600 00
62	Port Arthur, Duluth and Western....	84·75	84·75	271,200 00	271,200 00	271,200 00
63	Quebec Central.....	74·86	74·86	348,342 00	348,342 00	348,342 00
64	Quebec and Lake St. John.....	245·85	245·85	1,006,743 50	1,006,743 50	1,006,743 50
65	Quebec, Montmorency and Charlevoix	30	30	96,000 00	96,000 00	96,000 00
66	Shuswap and Okanagan.....	51	51	163,200 00	163,200 00	163,200 00
67	South Norfolk.....	17	17	54,400 00	54,400 00	54,400 00
68	St. Catharines and Niagara Central...	12	12	38,400 00	38,400 00	38,400 00
69	St. Clair Frontier Tunnel.....	2·23	2·23	375,000 00	375,000 00	375,000 00
70	St. Lawrence and Lower Laurentian..	38·85	38·85	217,600 00	217,600 00	217,600 00
71	St. Louis, Richibucto and Buctouche..	7	7	22,400 00	22,400 00	22,400 00
72	+St. Lawrence and Adirondack.....	33·51	33·51	108,201 60	149,481 60	149,481 60
73	Témiscouata.....	112·95	112·95	645,950 00	645,950 00	645,950 00
74	Thousand Island.....	4·33	4·33	24,400 00	24,400 00	24,400 00
75	+Tilsonburg, Lake Erie and Pacific...	16	19·50	62,400 00	51,200 00	51,200 00
76	Tobique Valley.....	27·88	27·88	134,016 00	134,016 00	134,016 00
77	Toronto, Gray and Bruce.....	4·58	4·58	14,656 00	14,656 00	14,656 00
78	+United Counties.....	59	65	208,000 00	188,816 00	188,816 00
79	Waterloo Junction.....	10·25	10·25	32,800 00	32,800 00	32,800 00
80	Western Counties.....	20	20	500,000 00	500,000 00	500,000 00
81	West Ontario Pacific.....	18·75	18·75	60,000 00	60,000 00	60,000 00
82	Cap de la Magdeleine.....	2·32	2·32	7,424 00	7,424 00	7,424 00
83	+Gulf Shore.....	16·78	17·50	56,000 00	53,699 20	53,699 20
84	+St. Stephen and Milltown.....	4·64	4·64	14,848 00	14,848 00	14,848 00
85	+Coast (of Nova Scotia).....	28·25	61	195,200 00	90,400 00	90,400 00
86	Grand Trunk.....	Bridge	Bridge	300,000 00	131,268 52	131,268 52
87	+Ottawa and New York.....	10·50	53·87	172,384 00	33,600 00	33,600 00
	Total.....	5,771·62	6,017·81	47,317,536 19	42,966,916 91	44,815,217 91

‡ Add subsidy of used rails as per statement, part iii, page 6, \$152,305.20, which will then agree with statement of subsidies in part ii, page 44, viz., \$43,119,223.11.

\* Includes the mileage of the North Shore Railway, 160 miles.

† By 60-61 Vic., cap. 4, a subsidy was authorized on certain mileage of this railway, specified in the Act of Parliament, of \$3,200 per mile and a further subsidy beyond the sum of \$3,200 per mile, of 50 per cent on so much of the *average cost* of the said specified mileage subsidized as in excess of \$15,000 per mile, such subsidy not exceeding in the whole the sum of \$6,400 per mile.

The amount of certain of the subsidies authorized by Parliament, given in this statement, includes the determined portion of the subsidies under 60-61 Vic., cap. 4, viz.: The amount produced by the \$3,200 per mile, but the other portion is now an undetermined amount, and therefore cannot be shown here.



## Department of Railways and Canals.

The following is the mileage of certain of the Railways shown in this statement and subsidized under 60-61 Vic., cap. 4:—

	MILES.
Ottawa, Arnprior and Parry Sound.....	56
Phillipsburg Junction .....	0·66
St. Lawrence and Adirondack.....	13·50
Tilsonburg, Lake Erie and Pacific.....	3·50
United Counties.....	1
Great Northern.....	44
Gulf Shore.....	5·50
St. Stephen's and Milltown.....	1·14
Drummond County.....	42·50
Coast (of Nova Scotia).....	61
Ottawa and New York.....	53·87

### STATEMENT showing Railways receiving Cash Subsidies of fixed amounts, payable Annually or Semi-annually for fixed period of years.

No.	Name of Railway.	Miles Subsidized.	Amount of Instalment.	Amount paid up to June 30, 1897.
				\$
1	International (Atlantic and North-west) Railway Co.....	252	\$93,300 per $\frac{1}{2}$ year for 20 years	1,679,400
2	Kingston, Smith's Falls and Ottawa Railway Co.....	56	\$3,136 " 21 "	Nil.
	Total .....	308		1,679,400

### STATEMENT showing Railways aided by the Grant of Loans.

No.	Name of Railway.	Amount of Loans authorized.	Amount loaned.
		\$	\$ cts.
1	Albert Railway Co.....	15,000	14,725 56
2	Fredericton and St. Mary's Bridge Co.....	300,000	300,000 00
3	St. John Bridge and Railway Extension Co.....	500,000	433,900 00
	Total .....	815,000	748,625 56



STATEMENT showing Railways subsidized by the Grant of used Iron Rails valued at the amount set forth.

No.	Name of Railway.	Tons of used Rails.	Subsidy on value of Rails.	Subsidy in used Rail paid.
			\$ cts.	\$ cts.
1	Central Railway Co. of New Brunswick.....	4,052	83,612 54	83,612 54
	Elgin, Petittcodiac and Havelock Ry. Co.....	2,201	44,252 82	44,252 82
	Chatham Branch Railway Co.....	958	24,439 84	24,439 84
	Total .....	7,211	152,305 20	152,305 20

STATEMENT showing Railways aided by the Loan of used Iron Rails valued at the amount set forth.

No.	Name of Railway.	Tons of used Rails.	Value of used Rails loaned.	Remarks.
			\$ cts.	
1	Kent Northern Railway Co .....	2,549	58,334 27	By 51 Victoria, chapter 3, these used rails will be granted as a subsidy (the section of road to be first laid with new steel rails weighing not less than 50 lbs. per lin. yard and after an O. C. had been passed authorizing transfer).
2	Halifax Cotton Co.....	233	4,235 00	
3	Steel Company of Canada.....	597	11,964 66	
4	Albert Railway Company.....	726	14,665 45	
	Total .....	4,105	89,299 38	

# Department of Railways and Canals.

STATEMENT showing Railways subsidized by Grants of Lands.

No.	Act authorizing Subsidy.	Name of Railway Company.	Mileage Subsidized.	Acres granted per Mile.	Total Area granted.
1	{ 48-49 Vic., c. 60 } { 50-51 Vic., c. 22 } { 52 Vic., c. 2 }	Alberta Railway and Coal Co.—Main line, Dunmore to Lethbridge .....	109·50	6,400	700,800
2	{ 52 Vic., c. 4 } { 52 Vic., c. 3 }	Alberta Railway and Coal Co.—From Leth- bridge to the International Boundary ..	64·62	6,400	413,568
3	53 Vic., c. 4.....	Calgary and Edmonton Railway .....	340·00	6,400	2,176,000
4	44 Vic., c. 1.....	Canadian Pacific Railway—Main line.....	.....	.....	18,206,986
5	53 Vic., c. 4.....	C. P. R.—Deloraine and Napinka Branch.	18·01	6,400	115,264
6	53 Vic., c. 4.....	C. P. R.—Glenboro' and Souris Branch ..	45·24	6,400	289,536
	{ 53 Vic., c. 4 } { 54 Vic., c. 10 }	C. P. R.—Kenmay and Estevan Branch..	156·86	6,400	1,003,904
	57-58 Vic., c. 6....	C. P. R.—Pipestone Branch .....	31·30	6,400	200,320
9	49 Vic., c. 11.....	Great North-western Central Railway....	50·00	6,400	320,000
10	58 Vic., c. 4.....	Lake Manitoba Railway and Canal Co....	125·00	6,400	800,000
11	48-49 Vic., c. 60 ..	Manitoba and North-western Railway— Main line.....	430·00	6,400	2,918,400
12	49 Vic., c. 11.....	Manitoba and North-western Railway— Branch from Biscarth..	26·00	6,000	
13	53 Vic., c. 4 .. .	Manitoba and South-eastern Railway Co.	98·00	6,400	627,200
14	{ 54-55 Vic., c. 10 } { 48-49 Vic., c. 10 }	Manitoba South-western Colonization Co.	218·25	6,400	1,396,800
15	{ 48-49 Vic., c. 60 } { 50-51 Vic., c. 23 }	Qu'Appelle, Long Lake and Saskatchewan Railway and Steamboat Co. ....	253·96	6,400	1,625,344
16	{ 52 Vic., c. 4 } { 54 Vic., c. 9 }	Red Deer Valley Railway and Coal Co...	55·00	6,400	352,000
17	57-58 Vic., c. 6....	Saskatchewan and Western Railway Co.	15·47	6,400	99,008
18	{ 47 Vic., c. 25, } { s. 7. }	Winnipeg Great Northern Railway ...	900·00	{ Div. A., 6,400 do B., 12,800 do C., 6,400 }	8,480,00
			2,937·21		39,725,13

## No. 2.

## LIST OF RAILWAY SUBSIDY ACTS PASSED IN EACH YEAR.

NOTE.—The marginal number opposite each subsidy has reference to the alphabetical list in the Deputy Minister's report showing the action taken in case where a contract for work has been made with any company.

By the Acts of Parliament below specified, authority has been placed in the hands of the Governor in Council to grant, upon certain conditions, aid towards the construction of various lines of railway throughout the Dominion, as follows, namely :—

By the Acts of 45 Vic., cap. 14, 1882 (*Assented to 17th May, 1882*) :—

1. For a railway from Gravenhurst to Callander, both in the province of Ontario, a subsidy not exceeding \$6,000 per mile, nor exceeding in the whole ..... \$660,000
2. For a railway from St. Raymond to Lake St. John, both in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 384,000
3. For a railway from a point on the Intercolonial Railway at Rivière du Loup or Rivière Ouelle, in the province of Quebec, or between them, to Edmundston, in the province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 240,000
4. For a railway from Oxford to New Glasgow, both in the province of Nova Scotia, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 224,000

“The said subsidies to be granted to such companies as shall be approved by the Governor in Council as having established, to his satisfaction, their ability to complete the said railways respectively, within a reasonable time, to be fixed by Order in Council, and according to descriptions and specifications to be approved by the Governor in Council on the report of the Minister of Railways and Canals, and specified in an agreement to be made by the company with the Government, and which the Government is empowered to make, and to be payable out of the Consolidated Revenue Fund of Canada, by instalments on the completion of each ten miles of railway, proportionate to the value of the portion so completed in comparison with the whole work undertaken, such proportion to be established by the report of the said Minister; provided always, that the granting of such bonuses or subsidies shall be subject to such conditions for securing such running powers or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting therewith, as the Governor in Council may determine.”

By the special Act 45 Vic., cap. 55, 1882 (*Assented to 17th May, 1882*) :—

5. A subsidy authorized in favour of “The Chignecto Marine Transport Railway Company,” provided that they construct and thereafter maintain and operate a ship railway, to be approved by the Government, across the Isthmus of Chignecto, from the Gulf of St. Lawrence to the Bay of Fundy, per year, for twenty-five years..... \$150,000

By the Act 46 Vic., cap. 25, 1883 (*Assented to 25th May, 1883*) :—

6. To the Baie des Chaleurs Railway Company, for 100 miles of their railway, from Métapediac, on the Intercolonial Railway, to Paspebiac, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 320,000



## Department of Railways and Canals.

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| 7. To the Caraquet Railway Company, for 36 miles of their railway, from a point near Bathurst to Caraquet, in the province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....  | \$115,200 |
| 8. To the Gatineau Valley Railway Company, for the first 50-mile section of their railway, from Hull station, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..   | 160,000   |
| 9. To the Great American and European Short Line Railway Company, for 80 miles of their railway, from Canso to Louisburg or Sydney, in the province of Nova Scotia, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....                                 | 256,000   |
| 10. To the International Railway Company, for 49 miles of their railway, from Sherbrooke, in the province of Quebec, to the international boundary line, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....  | 156,800   |
| 11. To the Northern and Western Railway Company, for 32 miles of their railway, from the Intercolonial Railway, near the Miramichi, to Moran's, near Demphy village, in the province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.. | 102,400   |
| 12. To the Montreal and Western Railway Company, for the first 50-mile section of their railway, out of St. Jérôme, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.  | 160,000   |
| 13. To the Napanee, Tamworth and Quebec Railway Company, for 28 miles of their railway, from Napanee to Tamworth, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 89,600    |
| 14. To the Quebec and Lake St. John Railway Company, for 25 miles of their railway, from St. Raymond to Lake St. John, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 80,000    |
| In addition to the subsidy granted by the Act forty-fifth Victoria, chapter fourteen.   |           |
| 15. For a railway from the International Railway at Petitcodiac to Havelock Corner, in the province of New Brunswick, 12 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 38,400    |
| 16. For a railway from Gravenhurst to Callander, 110 miles, a subsidy not exceeding \$6,000 per mile, nor exceeding in the whole.....   | 660,000   |
| In addition to the subsidy granted by the Act forty-fifth Victoria, chapter fourteen.   |           |

“The nine subsidies first mentioned to be granted to the companies hereinbefore named respectively ; and the two subsidies last mentioned to be granted to such companies as shall be approved by the Governor in Council as having established to his satisfaction their ability to complete the said railways, respectively ; and all the eleven lines above mentioned, and also the lines of railway in respect of which it is provided by the Act of forty-fifth Victoria, chapter fourteen, that subsidies may be granted, shall be commenced within two years from the first day of July next, and completed within a reasonable time, not to exceed four years from and after the passing of this Act, to be fixed by Order in Council, and according to descriptions and specifications to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made by each company with the Government, and which the Government is empowered to make ; and all the said subsidies authorized by this Act, respectively, to be paid out of the Consolidated Revenue Fund of Canada by instalments, on the completion of each section of not less than ten miles of railway, proportionate to the value of the portion so completed in comparison with the whole work undertaken, to be established by the report of the said Minister ; Provided always, that the granting of such subsidies shall be subject to such conditions for securing such running powers

or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized as the Governor in Council may determine."

By the special Act 46 Vic., cap. 26, 1883 (*Assented to 25th May, 1883*):—

- 17.** An advance authorized in favour of the "St. John Bridge and Railway Extension Company," to enable them to build a railway bridge across the River St. John, N.B., with railway connection with the Intercolonial, such advance to be secured by a mortgage on their entire property, not to exceed 80 per cent of the expenditure on the work, nor a total sum of .....\$ 500,000

By the Act 47 Vic., cap. 8, 1884 (*Assented to 19th April, 1884*):—

- 18.** To the Government of the province of Quebec, in consideration of their having constructed the railway from Quebec to Ottawa, forming a connecting line between the Atlantic and Pacific coasts via the Intercolonial and Canadian Pacific Railways, and being as such a work of national and not merely provincial utility, a subsidy not exceeding \$6,000 per mile for the portion between Quebec and Montreal, 159 miles, nor exceeding in the whole..... 954,000
- 19.** And for the portion between Montreal and Ottawa, 120 miles, \$12,000 per mile, nor exceeding in the whole.....1,440,000
- 20.** For the construction of a line of railway connecting Montreal with the harbours of St. John and Halifax by the shortest and best practicable route, after the report of competent engineers, a subsidy not exceeding \$170,000 per annum, for fifteen years, or a guarantee of a like sum for a like period as interest on bonds of the company undertaking the work.
- 21.** For the construction of a line of railway from Oxford station, on the Intercolonial Railway, to Sydney or Louisburg, a subsidy not exceeding \$30,000 per annum for fifteen years or a guarantee of a like sum for a like period as interest on the bonds of the company undertaking the work, in addition to the subsidies previously granted, and also a lease or transfer to such company of the Eastern Extension Railway, from New Glasgow to Canso, with its present equipment.
- 22.** To the Quebec Central Railway Company, for a line of railway from Beauce Junction to the international boundary line, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 211,200
- 23.** For the extension of the Canadian Pacific Railway, from its terminus at St. Martin's Junction, near Montreal, or some other point on the Canadian Pacific Railway, to the harbour of Quebec, in such manner as may be approved by the Governor in Council, a subsidy not exceeding \$6,000 per mile, nor exceeding in the whole..... 960,000
- 24.** To the Irondale, Bancroft and Ottawa Railway Company, for a line of railway from the Victoria branch of the Midland Railway to the village of Bancroft, in the township of Dungannon, county of Hastings, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 160,000
- 25.** To the Pontiac Pacific Junction Railway, for a line of railway from Hull or Aylmer to Pembroke, provided the Ottawa River is crossed at some point not east of Lapasse, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 272,000
- 26.** To the Gatineau Railway Company, for a line of railway from Kazuabazua to Le Désert, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 160,000
- 27.** To the Napanee, Tamworth and Quebec Railway Company, for a line of railway from Tamworth to Bogart and Bridgewater, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 70,400



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<b>28.</b>	To the Montreal and Western Railway Company, for a line of railway from the end of the line subsidized in the now last session of Parliament, towards Le Désert, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$160,000
<b>29.</b>	To the Northern and Western Railway Company, for a line of railway from Fredericton to the Miramichi River, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole (instead of the subsidy proposed in 1883).....	128,000
<b>30.</b>	To the Erie and Huron Railway Company, for a line of railway from Wallaceburg to Sarnia, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000
<b>31.</b>	To the Ontario and Pacific Railway Company, for a line of railway from Cornwall to Perth, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	262,400
<b>32.</b>	To the Kingston and Pembroke Railway Company, for a line of railway from Mississippi to Renfrew, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000
<b>33.</b>	To the Great Northern Railway Company, for that portion of their railway between St. Jérôme and New Glasgow, in the county of Terrebonne, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	32,000
<b>34.</b>	For a line of railway and bridge between the Jacques Cartier Union Railway Junction with the Canadian Pacific Railway and St. Martin's Junction connecting the Jacques Cartier Union Railway with the North Shore Railway proper, a subsidy not exceeding in the whole.....	200,000
<b>35.</b>	For a line of railway from Richibucto to St. Louis, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	22,400
<b>36.</b>	For a line of railway from Hopewell to Alma, in the province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	51,200
<b>37.</b>	For a line of railway from St. Andrew's to Lachute, in the county of Argenteuil, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	22,400
<b>38.</b>	For a line of railway from the Grand Piles, on the River St. Maurice, to Lake Edward, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	217,600
<b>39.</b>	For a line of railway from Annapolis to Digby, in the province of Nova Scotia, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000
<b>40.</b>	For a line of the Central Railway, from the head of Grand Lake to the Intercolonial Railway between Sussex and St. John, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	128,000
<b>41.</b>	To the Caraquet Railway Company, for the extension of their line of railway from Caraquet to Shippegan Harbour, in the province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	76,800
<b>42.</b>	For a branch of the Intercolonial Railway, from Metapediac eastward towards Paspébiac, twenty miles, in the province of Quebec, a sum not exceeding in the whole.....	300,000
<b>43.</b>	For a branch of the Intercolonial Railway, from Derby Station to Indian-town, fourteen miles, a sum not exceeding in the whole.....	140,000

"The subsidies hereinbefore mentioned as to be granted to companies named for that purpose shall be granted to such companies, respectively; the other subsidies shall be granted to such companies as shall be approved by the Governor in Council as having established, to his satisfaction, their ability to construct and complete the said railways respectively. All the lines for the construction of which subsidies are



granted shall be commenced within two years from the first day of July next and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council, except the line mentioned in the fourth section of this Act,\* which shall be commenced within one year, and shall also be constructed according to descriptions and specifications and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals and specified in an agreement to be made in each case by the company with the Government, and which the Government is hereby empowered to make; the location also of every such line of railway shall be subject to the approval of the Governor in Council; and all the said subsidies, respectively, shall be payable out of the Consolidated Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister. The subsidies to the province of Quebec shall be capitalized, and the interest shall be payable at such time and in such manner as the Government of Canada shall agree upon with the Government of the said province. The two subsidies last mentioned in the list are for works to be constructed by the Government of Canada.

“ Provided, always, that the granting of such subsidies to the companies mentioned, respectively, shall be subject to such conditions for securing such running powers or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council may determine.”

By the special Act 47 Vic., cap. 6, 1884 (*Assented to 19th April, 1884*):

44. Relating to an agreement with the province of British Columbia, authority was given, *inter alia*, for the grant of a subsidy to the “Esquimalt and Nanaimo Railway Company” in aid of the construction of a line of railway and telegraph between the points named; such subsidy to be in lands *en bloc* on Vancouver Island, the boundaries being fixed by the Act, and in money..... \$750,000

By the Act 48-49 Vic., cap. 59, 1885 (*Assented to 20th July, 1885*):

45. To the Ottawa, Waddington and New York Railway and Bridge Company, for a line of railway from Ottawa to Waddington, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 166,400
46. To the New Brunswick and Prince Edward Island Railway Company, for a line of railway from Sackville to the Straits of Northumberland, at or near Cape Tormentine, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 118,400
47. To the Montreal and Sorel Railway Company, for a line of railway from St. Lambert to Sorel, a subsidy not exceeding \$1,600 per mile, nor exceeding in the whole..... 72,000
48. To the Brockville, Westport and Sault Ste. Marie Railway Company, for a line of railway from Brockville to Westport, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 128,000
49. To the Quebec and Lake St. John Railway Company, for a line of railway from its junction on the North Shore Railway to St. Raymond, upon condition of the company extending their road to a point 50 miles north of St. Raymond, a subsidy not exceeding \$3,200 per mile nor exceeding in the whole..... 96,000
50. To the Northern and Western Railway Company, for a line of railway from the northern end of the 40 miles subsidized between Fredericton and the Miramichi River by 47 Victoria, chapter 8, to Boiestown, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 19,200

\* The extension of the Canadian Pacific Railway from its terminus at St. Martin's Junction, or some other point on the said railway to the harbour of Quebec.



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<b>51.</b>	To the Montreal and Champlain Junction Railway Company, for a line of railway from Brosseau's to Dundee, a subsidy not exceeding \$500 per mile, nor exceeding in the whole .....	\$30,000
<b>52.</b>	To the Thunder Bay Colonization Railway Company, for a line of railway from the Murillo station of the Canadian Pacific Railway to the east end of Whitefish Lake, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	92,000
<b>53.</b>	To the Central Ontario Railway Company, for a line of railway from Coe Hill or Rathbun, to Bancroft, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000
<b>54.</b>	To the Belleville and North Hastings Railway Company, for a line of railway from the village of Madoc to the junction with the Central Ontario Railway at Eldorado, a subsidy not exceeding \$1,500 per mile, nor exceeding in the whole .....	10,500
<b>55.</b>	For a line of railway from Long Sault to the foot of Lake Temiscamingue, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	25,600
<b>56.</b>	For a line of railway from a point on the Canada Southern Railway near Comber, to Lake Erie, at or near the village of Leamington, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole....	44,800
<b>57.</b>	To the Napanee, Tamworth and Quebec Railway Company, for a line of railway from Tamworth towards Bogart and Bridgewater, 16 miles, in lieu of the subsidy granted by 47 Vic., chap. 8, a subsidy of.....	70,000
<b>58.</b>	To the Gatineau Railway Company, for a line of railway from Hull station towards Le Désert, a distance of 62 miles, in lieu of the subsidies granted by 46 Vic., chap. 25, and 47 Vic., chap. 8, a subsidy of....	320,000
<b>59.</b>	For a line of railway from the Grand Piles, on the River St. Maurice, to its junction with Lake St. John Railway, a distance of about 50 miles, in lieu of the subsidy granted by 47 Vic., chap. 8, for a line of railway from the Grand Piles, on the River St. Maurice, to Lake Edward, a subsidy of.....	217,600
<b>60.</b>	To the Canada Atlantic Railway Company, for a line of railway from Valleyfield to a point one and a half miles west of Johnston's, a subsidy not exceeding \$1,600 per mile, and from one and a half miles west of Johnston's to Lacolle; also from the present terminus at Ottawa, to the Chaudiere Falls, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000
<b>61.</b>	For a line of railway from Indiantown via the Miramichi Valley, to its junction with the Northern and Western Railway at or near Boiestown, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	140,800

" The subsidies hereinbefore mentioned as to be granted to companies named for that purpose shall be granted to such companies, respectively; the other subsidies shall be granted to such companies as shall be approved by the Governor in Council as having established to his satisfaction their ability to construct and complete the said railways, respectively. All the lines for the construction of which subsidies are granted shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council; and shall also be constructed according to descriptions, specifications and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made in each case by the company with the Government, and which the Government is hereby empowered to make; the location, also, of every line of railway shall be subject to the approval of the Governor in Council; and all the said subsidies, respectively, shall be payable out of the Consolidated Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister.

“ Provided always, that the granting of such subsidies to the companies mentioned, respectively, shall be subject to such conditions for securing such running powers or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connected with those so subsidized, as the Governor in Council may determine.”

By the Act 48-49 Vic., cap. 58, 1885 (*Assented to 20th July, 1885*):—

- 62.** For a railway from a point on the Intercolonial Railway at Rivière du Loup or Rivière Ouelle, in the province of Quebec, to Edmundston, in the province of New Brunswick, a subsidy not exceeding two thousand eight hundred dollars per mile for seventy-five miles, and six thousand dollars per mile for eight miles, nor exceeding in the whole two hundred and fifty-eight thousand dollars; the said subsidy to be in addition to the subsidy authorized to be granted in aid of the construction of the said railway by the Act forty-fifth Victoria, chapter fourteen, and constituting with the subsidy so authorized, a subsidy not exceeding in the whole four hundred and ninety-eight thousand dollars, and to be granted for the said railway upon the terms and conditions specified in the said Act, and payable out of the Consolidated Revenue Fund of Canada; and for the purpose of incorporating the persons undertaking the construction of the said railway and those who shall be associated with them in the undertaking, the Governor may grant to them, under such corporate name as he shall deem expedient, a charter conferring upon them the franchises, privileges and powers requisite for the said purposes, which shall be similar to such of the franchises, privileges and powers granted to railway companies during the present session as the Governor shall deem most useful or appropriate to the said undertaking; and such charter being published in the *Canada Gazette*, with any Order or Orders in Council relating to it, shall have force and effect as if it were an Act of the Parliament of Canada.
- 63.** For a line of railway from the south bank of the St. Lawrence river, opposite or near Montreal, to the harbours of St. Andrew's, St. John and Halifax, via Sherbrooke, Moosehead Lake, Mattawamkeag, Harvey, Fredericton and Salisbury, a subsidy not exceeding eighty thousand dollars per annum for twenty years, forming in the whole, together with the subsidy authorized by the Act forty-seventh Victoria, chapter eight, for a line of railway connecting Montreal with the said harbours of St. John and Halifax by the shortest and best practicable route, which the line above described is found to be, a subsidy not exceeding two hundred and fifty thousand dollars per annum, the whole of which shall be paid in aid of the construction of such a line of railway for a period of twenty years, or a guarantee bond of a like sum for a like period as interest on the bonds of the company undertaking the work; the said subsidy to be so granted upon the terms and conditions of and payable out of the Consolidated Revenue Fund in the manner specified in the said last mentioned Act in respect of the subsidy thereby authorized in aid of the said line of railway.
- 64.** The Governor in Council may grant a further subsidy as an aid towards procuring free access as hereinafter described for the trains and traffic of the Canadian Pacific Railway Company from St. Martin's Junction, near Montreal, or from some other point on their railway to be selected by the said company, to the harbour of Quebec, in such a manner as shall be approved by the Governor in Council, that is to say: an additional subsidy not exceeding three hundred and forty thousand dollars, constituting, together with the subsidy authorized by the said last mentioned Act, to aid in procuring the extension of



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the Canadian Pacific Railway to Quebec, and the subsidy also thereby authorized to aid in constructing a line connecting the Canadian Pacific Railway at the Jacques Cartier Union Junction with the North Shore Railway proper (which subsidies shall be applicable to the said first mentioned purpose) a sum not exceeding in the whole the sum of one million five hundred thousand dollars, payable out of the Consolidated Revenue Fund of Canada.

The said Act further provided as follows in relation to this matter:—

“If it should be expedient so to do in order to facilitate such access, the Governor in Council may acquire the North Shore Railway, and may apply the said sum of one million five hundred thousand dollars, or any part thereof, in aid of such acquisition and upon such acquisition may transfer and convey or lease the said railway to the Canadian Pacific Railway Company, subject to such obligation as the Government shall have assumed in acquiring it.”

By the Act 49 Vic., cap. 10, 1886 (*Assented to 2nd June, 1886*):—

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| <b>65.</b> | For a railway from a point at or near Moncton, to Buctouche, in the province of New Brunswick, thirty miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....  | \$ 96,000 |
| <b>66.</b> | For a railway from Ingersoll via London to Chatham, in the province of Ontario, eighty miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 256,000   |
| <b>67.</b> | To the Northern and Western Railway Company, for ten miles of their railway, intervening between the termini of the portions of their railway for which subsidies are already granted, the one from Fredericton and the other from Indiantown, and an extension of two miles down to deep water at Chatham, in the province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole. | 32,000    |
| <b>68.</b> | To the Caraquet Railway Company, for ten miles of their railway, from the end of the present subsidized portion at Lower Caraquet to Shippegan, in the province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 32,000    |
| <b>69.</b> | To the Lake Erie, Essex and Detroit River Railway Company, for thirty-seven miles of their railway, from Windsor to Leamington, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 118,400   |
| <b>70.</b> | To the Thunder Bay Colonization Railway Company, for fifty-six miles of their railway, from the end of the present subsidized section to a point near Crooked Lake, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 179,200   |
| <b>71.</b> | To the Parry Sound Colonization Railway Company, for forty miles of their railway, from the village of Parry Sound to the village of Sundridge, on the line of the Northern Pacific Junction Railway, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 128,000   |
| <b>72.</b> | For a railway from a point at or near New Glasgow or St. Lin, to or near Montcalm, in the province of Quebec, eighteen miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 57,600    |
| <b>73.</b> | For a railway from Hereford to the International Railway, in the township of Eaton, in the province of Quebec, thirty-four miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..  | 108,800   |
| <b>74.</b> | For a railway from St. Félix to Lake Maskinongé, parish of St. Gabriel in the province of Quebec, ten miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....  | 32,000    |
| <b>75.</b> | For a railway from Glenannan to Wingham, in the province of Ontario, five miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....  | 16,000    |

<b>76.</b>	For a railway from a point at or near the McCann Station, on the Intercolonial Railway, to the Joggins, on Cumberland Basin, in the province of Nova Scotia, twelve miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 38,400
<b>77.</b>	For a railway from L'Assomption to L'Epiphanie, in the province of Quebec, three miles and a half, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	11,200
<b>78.</b>	To the Montreal and Western Railway Company, for seventy miles of their railway from St. Jérôme, north-westerly towards Désert, in the province of Quebec, a subsidy of \$5,161 per mile, in lieu of the subsidies granted by 46 Vic., chap. 25, and 47 Vic., chap. 8, not exceeding in the whole .....	361,270
<b>79.</b>	For a railway from St. Andrew's to the Canadian Pacific Railway at or at any point east of the town of Lachute, in the county of Argenteuil, in the province of Quebec, seven miles, in lieu of the subsidy granted by 47 Vic., chap. 8, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	22,400
<b>80.</b>	To the Canada Atlantic Railway Company, for twelve miles of their railway from Clark's Island to Valleyfield, and from Lacolle, in the province of Quebec, to the international boundary, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	38,400
<b>81.</b>	For a railway from Truro to Newport, in the province of Nova Scotia, forty-nine miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	156,800
<b>82.</b>	To the Quebec and Lake St. John Railway Company, for ninety-five miles of their railway, from a point fifty miles north of St. Raymond to Lake St. John, in the province of Quebec, a subsidy not exceeding \$1,961 per mile, nor exceeding in the whole (in addition to the subsidy granted by 45 Victoria, chapter 14, and 46 Victoria, chapter 25, of \$3,200 per mile).....	186,295
<b>83.</b>	To the Cap Rouge and St. Lawrence Railway Company, for twelve miles of their railway from Lorette via Cap Rouge to Quebec, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	38,400
<b>84.</b>	For the construction of wharfs and landing stages on the line of the railway from Long Sault to the foot of Lake Temiscamingue, a subsidy of.....	6,000
<b>85.</b>	To the Gananoque, Perth and James Bay Railway Company, seventeen miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	54,400
<b>86.</b>	For a railway from St. Eustache to St. Placide, county of Two Mountains, eighteen miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	57,600
<b>87.</b>	For a railway from a point on the Intercolonial Railway through the Stewiacke Valley, on the line which will afford facilities of communication with the Iron Mines, Spring Side, Upper Stewiacke and Musquodoboit settlements, twenty-five miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	80,000
<b>88.</b>	For a railway from Yamaska to the River St. Francis, in the province of Quebec, ten miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	32,000
<b>89.</b>	For a railway from Perth Centre station, on the New Brunswick Railway, to a point near Plaister Rock Island, in the province of New Brunswick, twenty-eight miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	89,600
<b>90.</b>	For a railway from Fredericton to the village of Prince William, in the province of New Brunswick, twenty-two miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	70,400



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| <b>91.</b> For a railway from a point on the Intercolonial Railway near Newcastle or via Douglastown to a point on the River Miramichi, opposite the town of Chatham, in the province of New Brunswick, six miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.   | \$19,200 |
| <b>92.</b> For a railway from a point on the Canadian Pacific Railway to Eganville, in the province of Ontario, twenty-two miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....  | 70,400   |
| <b>93.</b> To the Belleville and North Hastings Railway Company, for seven miles of their railway, from the village of Madoc to the junction with the Central Ontario Railway at Eldorado, in the province of Ontario, a subsidy (in addition to the subsidy of \$1,500 per mile granted by 48-49 Victoria, chapter 59), not exceeding \$1,700 per mile, nor exceeding in the whole..... | 11,900   |
| <b>94.</b> To the Napanee, Tamworth and Quebec Railway Company, for eighteen miles of their railway from Tamworth to Tweed, in lieu of the subsidy granted by 48-49 Victoria, chapter 59, a subsidy of.....  | 70,000   |
| <b>95.</b> To the Albert Railway Company, for their railway from Salisbury to Hopewell, in the province of New Brunswick, which is a feeder to the Intercolonial Railway, in the form of a loan, repayable at such time and secured in such manner as the Governor in Council determines, a subsidy of.....  | 15,000   |

“The subsidies hereinbefore mentioned as to be granted to the companies named for that purpose shall be granted to such companies respectively ; the other subsidies shall be granted to such companies as shall be approved by the Governor in Council as having established, to his satisfaction, their ability to construct and complete the said railways respectively. All the lines for the construction of which subsidies have been granted shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council, and shall be so constructed according to descriptions and specifications and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in the agreement to be made in each case by the company to the Government, and which the Government is hereby empowered to make ; the location, also, of every such line of railway shall be subject to the approval of the Governor in Council, and all the said subsidies, respectively, shall be payable out of the Consolidated Revenue Fund of Canada, by instalments on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister : Provided always, that the granting of such subsidies to the companies mentioned, respectively, shall be subject to such conditions for securing such running powers or traffic arrangements, and other rights, as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council may determine.”

By section 2 of this Act authority was given for the grant of a charter by the Governor in Council for the purpose of constructing a railway from Long Sault to the foot of Lake Temiscamingue.

By the Act 50-51 Vic., cap. 24, 1887 (*Assented to 23rd June, 1887*).

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|---|-----------|
| <b>96.</b> To the St. Catharines and Niagara Railway Company, for twelve miles of their railway from the city of St. Catharines to the bridge over the Niagara River, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....               | \$ 38,400 |
| <b>97.</b> To the Vaudreuil and Prescott Railway Company, for thirty miles of their railway from Vaudreuil towards Hawkesbury, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....  | 96,000    |
| <b>98.</b> To the Richmond Hill Junction Railway Company, for five miles of their railway from Richmond Hill Junction, on the Northern Railway of Canada, to Richmond Hill village, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... | 16,000    |



<b>99.</b>	To the Drummond County Railway Company, for thirty miles of their railway from Drummondville towards Nicolet, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000
<b>100.</b>	To the Joggins Railway Company, for one and a quarter miles of their railway extending from the southern end of the portion subsidized by the Act 49 Victoria, chapter 10, to the wharfs, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	4,000
<b>101.</b>	To the Moncton and Buctouche Railway Company, for two miles of their railway from the west end of the portion subsidized by the Act 49 Victoria, chapter 10, to Moncton, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	6,400
<b>102.</b>	To the Beauharnois Junction Railway Company, for thirty miles of their railway from St. Martin's towards St. Anicet, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000
<b>103.</b>	To the Harvey Branch Railway Company, for three miles of their railway from the southern terminus of the Albert Railway to Harvey Bank, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	9,600
<b>104.</b>	To the Brantford, Waterloo and Lake Erie Railway Company, for eighteen miles of their railway from the town of Brantford to the village of Hagarsville or the village of Waterford, or some intermediate point on the Canada Southern Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	57,600
<b>105.</b>	To the Guelph Junction Railway Company, for sixteen miles of their railway from its junction with the Canadian Pacific Railway to the town of Guelph, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	51,200
<b>106.</b>	To the Massawippi Railway Company, for ten miles of their railway from a point on the Atlantic and North-western Railway near the village of Magog, to Ayer's Flat station, on the Massawippi Valley Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	32,000
<b>107.</b>	To the Napanee, Tamworth and Quebec Railway Company, for four miles of their railway from the north end of the section subsidized by the Act passed in the session held in the forty-eighth and forty-ninth years of Her Majesty's reign, chapter 59, to Tweed, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	12,800
<b>108.</b>	To the Dominion Lime Company, for seven miles of their railway from a point on the Quebec Central Railway, in the township of Dudswell, to the Dudswell Lime Company's quarries, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	22,400
<b>109.</b>	To the South Norfolk Railway Company, for seventeen miles of their railway from Port Rowan to the town of Simcoe, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	54,400
<b>110.</b>	To the Jacques Cartier Union Railway Company, extending and completing their railway, a subsidy of.....	20,000
<b>111.</b>	For a line of railway from Mount Forest to Walkerton, twenty-four miles in length, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	76,800
<b>112.</b>	To the Oshawa Railway and Navigation Company, for seven miles of their railway from Port Oshawa towards Raglan, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	22,400
<b>113.</b>	To the Saguenay and Lake St. John Railway Company, for thirty miles of their railway from Lake St. John towards Chicoutimi, or from Chicoutimi towards Lake St. John, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000

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<b>114.</b>	To the Great Eastern Railway Company, for thirty miles of their railway from the River St. Francis to the Arthabaska Railway, at St. Grégoire station, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$96,000
<b>115.</b>	To the Ontario and Pacific Railway Company, for six miles of their railway from the northern end of the portion subsidized by the Act 47 Victoria, chapter 8, to the town of Perth, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	19,200
<b>116.</b>	To the Caraquet Railway Company, for seven miles of their railway from Lower Caraquet to Shippegan, in lieu of the subsidy granted by the Act 49 Victoria, chapter 10, a subsidy not exceeding in the whole..	32,000
<b>117.</b>	To the St. Lawrence and Lower Laurentian and Saguenay Railway Company, for the section of this railway from Grand Piles, on the St. Maurice River, to its junction with the Quebec and Lake St. John Railway, in lieu of the subsidy granted by the Act passed in the session held in the forty-eighth and forty-ninth years of Her Majesty's reign, chapter 59, for a line of railway from Grand Piles, on the St. Maurice River, to its junction with the Lake St. John Railway, a distance of about fifty miles, a subsidy of.....	217,600
<b>118.</b>	To the St. John Valley and River du Loup Railway Company, for twenty-two miles of their railway from the village of Prince William towards the town of Woodstock, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	70,400
<b>119.</b>	To the Lake Temiscamingue Railway Company, for four short sections of railway, in all about two miles in length, to overcome the rapids of the Ottawa River, known as "La Mi-Charge," "La Cave," "Les Erables," and "La Montagne," and for the construction of wharfs and landing stages at these rapids, to connect the Canadian Pacific Railway at Mattawa with Lake Temiscamingue by steamboats, railways and other works (in lieu of a portion two miles in length, out of the eight miles of railway subsidized by the Act passed in the session held in the forty-eighth and forty-ninth years of Her Majesty's reign, chapter 59, under which about six miles of railway have already been built from the foot of Long Sault proper to the foot of Lake Temiscamingue, and in lieu also of the subsidy granted by the Act 49 Victoria, chapter 10), a subsidy of.....	12,400
<b>120.</b>	To the Carillon and Grenville Railway Company, for twelve miles of their railway from St. Eustache to Sault au Récollet, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	38,400
<b>121.</b>	To the Minudie Branch Railway Company, for five and a half miles of their railway from its junction with the Joggins Railway, near the River Hébert railway bridge, to the village of Minudie, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	17,600
<b>122.</b>	To the Lake Temiscamingue Colonization and Railway Company, for ten and a half miles of their railway from the Long Sault to Lake Kippewa, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	33,600
<b>123.</b>	To the Leamington and St. Clair Railway Company, for two miles of their railway from the north end of the section subsidized by the Act passed in the session held in the forty eighth and forty-ninth years of Her Majesty's reign, chapter 59, to the village of Comber, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	6,400
<b>124.</b>	To the Cumberland Railway and Coal Company for fourteen miles of their railway from a point on the Spring Hill and Parrsboro' Railway, near Spring Hill, to a point on the railway between Oxford and New Glasgow, near Oxford village, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	44,800



<b>125.</b>	To the Montreal and Champlain Junction Railway Company, a subsidy of.....	\$ 64,000
<b>126.</b>	To the Quebec and Lake St. John Railway Company, for nine miles of their railway, the distance which the previous subsidies granted are short of covering from the city of Quebec to Lake St. John, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole....	28,800
<b>127.</b>	To the Temiscouata Railway Company, for thirty miles of a branch of their railway from Edmundston towards the St. Francis River, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..	96,000
<b>128.</b>	To the Cornwallis Valley Railway Company, for thirteen miles of their railway from Kentville to Kingsport, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	41,600
<b>129.</b>	To the Nova Scotia Central Railway Company, for thirty-four miles of their railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole .....	108,800
<b>130.</b>	To the Tobique Valley Railway Company, for fourteen miles of their railway from Perth Centre station towards Plaister Rock Island, in lieu of the subsidy granted by the Act 49 Victoria, chapter 10, for a railway from Perth Centre station, on the New Brunswick Railway, to a point near Plaister Rock Island, a subsidy of.....	89,600
<b>131.</b>	For a railway from Woodstock towards Centreville, twenty miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..	64,000
<b>132.</b>	For a railway bridge over the St. Lawrence River, at Coteau Landing on the line of the Canada Atlantic Railway, a subsidy of fifteen per cent on the value of the structure, not to exceed.....	180,000
<b>133.</b>	To the Lake Erie, Essex and Detroit River Railway Company, for twenty-seven miles of their railway, in lieu of the subsidy granted by the Act 49 Victoria, chapter 10, a subsidy not exceeding.....	118,400

"For the purpose of granting corporate powers to persons or companies undertaking the construction of railways or parts of railways, mentioned in the next preceding section, for the construction of which no corporate powers exist at the time of the passing of this Act, the Governor in Council may grant to them, under such corporate name as he shall deem expedient, a charter conferring upon them the franchises, privileges and powers requisite for the said purposes, as the Governor in Council shall deem most useful or appropriate to the said undertaking; and such charter being published in the *Canada Gazette*, with any Order or Orders in Council relating to it, shall have force and effect as if it were an Act of the Parliament of Canada.

"The subsidies hereinbefore mentioned as to be granted to companies named for that purpose shall be granted to such companies respectively; the other subsidies, including subsidies granted for railways over a line extending beyond a point to which any company hereinbefore mentioned by name is authorized to construct their railway, shall be granted to such companies as shall be approved by the Governor in Council, as having established, to his satisfaction, their ability to construct and complete the said railways respectively; all the lines for the construction of which subsidies are granted shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council; and shall also be constructed according to descriptions and specifications and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made in each case by the company with the Government, and which the Government is hereby empowered to make; the location, also, of every such line of railway shall be subject to the approval of the Governor in Council; and all the said subsidies respectively shall be payable out of the Consolidated Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon completion of the work subsidized, except as regards the subsidy for the bridge over the



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St Lawrence River, upon which shall be paid fifteen per cent of the value of work done on monthly progress estimates, certified by the Chief Engineer, and upon the approval of the Minister of Railways and Canals.

“The granting of such subsidies to the companies mentioned, respectively, shall be subject to such conditions for securing such running powers or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council determines.

“Notwithstanding anything contained in the Act forty-fifth Victoria, chapter fourteen, or in the Act forty-sixth Victoria, chapter twenty-five, the balances of the sums granted for a railway from St. Raymond to Lake St. John and to the Quebec and Lake St. John Railway Company by the said Acts respectively, which have not yet been paid by the Government, may be paid at any time within one year from the passing of this Act, subject to the conditions in the said Act contained.”

By the Act 51 Vic., cap. 3, 1888 (*Assented to 22nd May, 1888*):—

- |             |  |              |
|-------------|--|--------------|
| <b>134.</b> | To the Ottawa and Parry Sound Railway Company, for 22 miles of their railway from a point on the Canadian Pacific Railway to Eganville, in lieu of the subsidy granted by 49 Victoria, chapter 10, for a railway from a point on the Canadian Pacific Railway to Eganville, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....  | \$ 70,400 00 |
| <b>135.</b> | To the Nova Scotia Central Railway Company, for 46 miles of their railway, in the province of Nova Scotia, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 147,200 00   |
| <b>136.</b> | To the Montreal and Champlain Junction Railway Company, for 3 miles of their railway from the end of the present subsidized section, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 9,600 00     |
| <b>137.</b> | To the Massawippi Junction Railway Company, for their railway from a point on the Atlantic and North-west Railway, near the village of Magog, to Ayer's Flat station, on the Massawippi Valley Railway, in lieu of the subsidy granted by 50-51 Victoria, chapter 24, a subsidy of.....  | 32,000 00    |
| <b>138.</b> | To the Pontiac Pacific Junction Railway Company, for bridging the several channels of the Ottawa River at Culbute and west thereof, a subsidy of \$31,500, to be paid out monthly as the work progresses, upon the certificate of the Chief Engineer of Government railways, in the proportion which the value of the work executed bears to the value of the whole work undertaken, and for three miles of their railway extending from a point three miles east of Pembroke to Pembroke, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole \$9,600, provided that the entire work subsidized upon this railway shall be completed within four years from the passing of this Act, the subsidy granted by this Act not to exceed in the whole..... | 41,100 00    |
| <b>139.</b> | To the Port Arthur, Duluth and Western Railway Company, for 84½ miles of their railway from Port Arthur towards Gun Flint Lake, in lieu of the subsidies granted by 48-49 Victoria, chapter 59, and 49 Victoria, chapter 10, for the construction of a railway from Murillo Station to Crooked Lake, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 271,200 00   |
| <b>140.</b> | To the Quebec and Lake St. John Railway Company, for 30 miles of their railway from Lake St. John towards Chicoutimi, or from Chicoutimi towards Lake St. John, being a transfer made at the request of the Saguenay and Lake St. John Railway Company of the subsidy granted to them by 50-51 Victoria, chapter 24, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 96,000 00    |

<b>141.</b>	To the Temiscouata Railway Company, for 20 miles of their branch railway from Edmundston towards the St. Francis River, in the province of Quebec, in lieu of the subsidy granted by 50-51 Victoria, chapter 24, a subsidy of.....	\$100,000 00
<b>142.</b>	To the Quebec Central Railway Company, for the construction and completion of a line of railway from St. Francis Station to a point on the Atlantic and North-west Railway near Moose River, 90 miles, in lieu of the balance of the subsidy, unearned, granted by 47 Victoria, chapter 8, a subsidy not exceeding \$21,191.54 per annum for twenty years, or a guarantee of a like sum for a like period as interest on the bonds of the company, such annual subsidy for twenty years representing a grant in cash of .....	288,000 00
<b>143.</b>	To the Central Railway Company of New Brunswick, a grant as subsidy (the road to be first laid with new steel rails weighing not less than 56 pounds per lineal yard, and after an Order in Council has been passed authorizing their transfer to the company) of 4,052 tons of used iron rails and fastenings, loaned to the St. Martin's and Upham Railway Company, now forming part of the Central Railway, which rails and fastenings stand in the Public Accounts as an asset for.....	83,612 54
<b>144.</b>	To the Elgin, Petitediac and Havelock Railway Company of New Brunswick, a grant as subsidy (the road to be first laid with new steel rails weighing not less than 56 pounds per lineal yard, and after an Order in Council has been passed authorizing their transfer to the company) of 2,201 tons of used iron rails and fastenings loaned to the Elgin Branch Railway, now forming part of the Elgin, Petitediac and Havelock Railway, which rails and fastenings stand in the Public Accounts as an asset for .....	44,252 82
<b>145.</b>	To the Kent Northern Railway Company of New Brunswick, a grant as subsidy (the road to be first laid with new steel rails weighing not less than 56 pounds per lineal yard, and after an Order in Council has been passed authorizing their transfer to the company) of 2,549 tons of used iron rails and fastenings loaned to the company, which rails and fastenings stand in the Public Accounts as an asset for.....	58,334 27
<b>146.</b>	To the Halifax Cotton Company of Nova Scotia, a grant as subsidy (the road to be first laid with new steel rails weighing not less than 56 pounds per lineal yard, and after an Order in Council has been passed authorizing their transfer to the company) of 233 tons of used iron rails and fastenings loaned to the company, which rails and fastenings stand in the Public Accounts as an asset for.....	4,335 00
<b>147.</b>	To the Steel Company of Canada, in Nova Scotia, a grant as subsidy (the road to be first laid with new steel rails weighing not less than 56 pounds per lineal yard, and after an Order in Council has been passed authorizing their transfer to the company) of 597 tons of used iron rails and fastenings loaned to the company, which rails and fastenings stand in the Public Accounts as an asset for.....	11,964 66
<b>148.</b>	To the Albert Railway Company of New Brunswick, a grant as a subsidy (the section of road to be first laid with new steel rails weighing not less than 56 pounds per lineal yard, and after an Order in Council has been passed authorizing their transfer to the company) of 726 tons of used iron rails and fastenings loaned to the company, which rails and fastenings stand in the Public Accounts as an asset for.....	14,665 45



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- 149.** To the Chatham Branch Railway of New Brunswick, a grant as subsidy (the road to be first laid with new steel rails weighing not less than 56 pounds per lineal yard, and after an Order in Council has been passed authorizing their transfer to the company) of 958 tons of used iron rails and fastenings loaned to the company, which rails and fastenings stand in the Public Accounts as an asset for..... \$24,439 84

" All the lines, for the construction of which subsidies are granted, shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council, and shall also be constructed according to descriptions and specifications, and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made in each case by the company with the Government, and which the Government is hereby empowered to make; the location also of every such line of railway shall be subject to the approval of the Governor in Council; and also the said subsidies respectively, payable in cash, shall be payable out of the Consolidated Revenue Fund of Canada by instalments, on the completion to the satisfaction of the Minister of Railways and Canals of each section of the railway of not less than 10 miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon completion of the work subsidized."

By the Act 52 Vic., chap. 3, 1889. (*Assented to 2nd May, 1889*):—

- 150.** To the Ontario and Pacific Railway Company, for a line of railway from Cornwall to Ottawa, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... \$172,400 00
- 151.** To the Ottawa and Gatineau Railway Company, for a line of railway from Hull station towards Le Désert, a distance of sixty-two miles, a subsidy not exceeding in the whole..... 320,000 00
- 152.** To the Cap Rouge and St. Lawrence Railway Company, for twelve miles of their railway, from Lorette via Cap Rouge to Quebec, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 38,400 00
- 153.** To the Parry Sound Colonization Railway Company, for forty miles of their railway, from the village of Parry Sound to the village of Sundridge, or some other point on the line of the Northern and Pacific Junction Railway, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole ..... 128,000 00
- 154.** For a railway from St. Andrew's to the Canadian Pacific Railway, at or at any point east of the town of Lachute, in the county of Argenteuil, in the province of Quebec, seven miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole. .... 22,400 00
- 155.** For a railway from Truro, or a point between Truro and Stewiacke, to Newport or to Windsor, in the province of Nova Scotia, forty-nine miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 156,800 00
- 156.** For a line of the Central Railway from the head of Grand Lake to the Intercolonial Railway, in the province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 128,000 00
- 157.** To the Albert Southern Railway Company, the balance remaining unpaid of the subsidy granted by the Act 47th Victoria, chapter 8, not exceeding in the whole ..... 31,771 43
- 158.** To the Baie des Chaleurs Railway Company, the balance remaining unpaid of the subsidy mentioned in the Act 49th Victoria, chapter 17, not exceeding in the whole ..... 244,500 00



<b>159.</b>	To the Irondale, Bancroft and Ottawa Railway Company, for a line of railway from the Victoria Branch of the Midland Railway to the village of Bancroft, in the county of Hastings, the balance remaining unpaid of the subsidy granted by the Act 47th Victoria, chapter 8, not exceeding in the whole.....	\$145,000 00
<b>160.</b>	To the Northern and Pacific Junction Railway Company, for a railway from Gravenhurst to Callander, the balance remaining unpaid of the subsidies granted by the Act 45th Victoria, chapter 14, and 46th Victoria, chapter 25, not exceeding in the whole..	35,000 00
<b>161.</b>	For a railway from some point on the Joggins Railway, near the Hébert River, to Young's Mills, in the province of Nova Scotia, a distance of five miles, a subsidy not exceeding \$3,200 per mile, and not exceeding in the whole.....	16,000 00
<b>162.</b>	To the St. Clair Frontier Tunnel Company, for the construction of a tunnel under the St. Clair River, from a point at or near Sarnia, to a point at or near Port Huron, a subsidy not exceeding in the whole.....	375,000 00
<b>163.</b>	To the Pontiac and Renfrew Railway Company, for six miles of their railway from the north bank of the Ottawa River, opposite Braeside, or from Bristol Iron Mines, to the Pontiac Pacific Junction Railway, near the Quyon River, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, and not exceeding in the whole.....	19,200 00
<b>164.</b>	To the Quebec, Montmorency and Charlevoix Railway Company, for thirty miles of their railway, from the east bank of the St. Charles River, to or near to Cap Tourmente, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, and not exceeding in the whole.....	96,000 00
<b>165.</b>	To the Fredericton and St. Mary's Bridge Company, for a bridge over the St. John River, at Fredericton, in the province of New Brunswick, a subsidy not exceeding in the whole.....	30,000 00
<b>166.</b>	To the Napanee, Tamworth and Quebec Railway Company, for seven miles of their railway, from a point at or near Yarker to a point at or near Harrowsmith, and to a company for three miles of railway from a point at or near Harrowsmith to a point at or near Sydenham, a subsidy not exceeding \$3,200 per mile, and not exceeding in the whole.....	32,000 00
<b>167.</b>	For a railway from a point near Sicamous, on the Canadian Pacific Railway, to a point on Lake Okanagan for fifty-one miles of such railway, a subsidy not exceeding \$3,200 per mile, and not exceeding in the whole.....	163,200 00
<b>168.</b>	To the Cornwallis Valley Railway Company, for one mile of their railway, from the end of the line subsidized by the Act 50-51 Victoria, chapter 24, to Kingsport, in the province of Nova Scotia, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	3,200 00
<b>169.</b>	To the Lake Témiscamingue Colonization and Railway Company, for fifteen miles of their railway, from Mattawa station on the Canadian Pacific Railway, towards the Long Sault, or from the Long Sault towards the said Mattawa station, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00
<b>170.</b>	To the Maskinongé and Nipissing Railway Company, for fifteen miles of their railway, from a point on the Canadian Pacific Railway at or near Maskinongé or Louiseville, towards the parish of Saint-Michel des Saints, on the River Mattawin, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00

## Department of Railways and Canals.

<b>171.</b>	To the Kingston, Smith's Falls and Ottawa Railway Company, for twenty miles of their railway, from the city of Kingston towards Smith's Falls, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 64,000 00
<b>172.</b>	To the South Ontario Pacific Railway Company, for forty-nine and one-half miles of their railway, from Woodstock to Hamilton, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	158,400 00
<b>173.</b>	For a railway from St. Césaire to St. Paul d'Abbotsford, in the province of Quebec, five miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	16,000 00
<b>174.</b>	To the Great Eastern Railway Company, for twenty miles of their railway, from the east end of the line subsidized by the Act 50-51 Victoria, chapter 24, at St. Grégoire, towards the Chaudière Junction station on the Intercolonial Railway, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000 00
<b>175.</b>	To the Drummond County Railway Company, for four and one-half miles of their railway, from the end of the line subsidized by the Act 50-51 Victoria, chapter 24, to Ball's Wharf, on the St. Lawrence River, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	14,400 00
<b>176.</b>	To the St. Catharines and Niagara Central Railway Company, for twenty miles of their railway, from the end of the line subsidized by the Act 50-51 Victoria, chapter 24, at St. Catharines, towards the city of Hamilton, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000 00
<b>177.</b>	To the Quebec and Lake St. John Railway Company, for twenty miles of their railway, from the end of the section of thirty miles from Lake St. John towards Chicoutimi, subsidized by the Act 51 Victoria, chapter 3, towards Chicoutimi, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000 00
<b>178.</b>	To the Grand Trunk, Georgian Bay and Lake Erie Railway Company, for fifteen miles of their railway, from the village of Tara or some point between Tara and Hepworth, to the town of Owen Sound, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00
<b>179.</b>	To the Hereford Railway Company, for fifteen miles of their railway, from Cookshire to a junction with the Quebec Central Railway at Dudswell, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00
<b>180.</b>	To the Massawippi Junction Railway Company, for fifteen miles of their railway, from Ayer's Flat to Coaticook, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00
<b>181.</b>	To the Brockville, Westport and Sault Ste. Marie Railway Company, for twenty miles of their railway, from a point at or near Newboro', towards Palmer's Rapids, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	64,000 00
<b>182.</b>	To the Thousand Islands Railway Company, for four miles of their railway, from a point near the St. Lawrence River, in Gananoque village, to Gananoque Junction of the Grand Trunk Railway, and for thirteen miles of their railway, from Gananoque Junction of the Grand Trunk Railway to a junction with the Brockville, Westport and Sault Ste. Marie Railway, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	54,400 00



- 183.** For a railway from Cape Tourmente towards Murray Bay, twenty miles, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... \$64,000 00
- 184.** To the Amherstburg, Lake Shore and Blenheim Railway Company, for twenty miles of their railway, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... 64,000 00

“So much of the subsidy of three thousand two hundred dollars per mile, which under the provisions of the Act forty-ninth Victoria, chapter seventeen, and of this Act, may be paid to the Baie des Chaleurs Railway Company in respect of the thirty miles of their railway, from the seventieth to the hundredth mile, eastward from Metapediac, shall be applicable to the section of the said railway, comprised between the fortieth and the seventieth mile thereof, eastward from Metapediac, instead of to the said first mentioned section of thirty miles, making six thousand four hundred dollars per mile applicable to the secondly mentioned section of thirty miles; but the foregoing provision shall be subject to the condition that the said company undertake to complete the thirty miles of their railway from the seventieth to the hundredth mile eastward from Metapediac within a reasonable time, not to exceed four years, to be fixed by Order in Council, and without any further subsidy from the Government of Canada, and that they deposit with the Minister of Railways and Canals, as security to the Crown that they will well and truly carry out their undertaking, their bonds to the amount of two hundred thousand dollars.

“The subsidies hereinbefore mentioned as to be granted to companies named for that purpose, shall be granted to such companies respectively; all the lines for the construction of which subsidies are granted, unless they are already commenced, shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council, and shall also be constructed according to descriptions and specifications and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made in each case by the company with the Government, and which the Government is hereby empowered to make; the location, also, of every such line of railway shall be subject to the approval of the Governor in Council; and all the said subsidies, respectively, shall be payable out of the Consolidated Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon the completion of the work subsidized, except as respects the tunnel under the St. Clair River, in which case there shall be paid fifteen per cent of the value of work done on monthly progress estimates, certified by the Chief Engineer, and upon the approval of the Minister of Railways and Canals.

“The granting of such subsidies, respectively, shall be subject to such conditions for securing such running powers or traffic arrangements and other rights, as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council determines.

“And for the removal of doubts it is hereby declared and enacted that the provision in the Act passed in the fifty-first year of Her Majesty's reign, and chaptered three, relating to the Pontiac Pacific Junction Railway Company, extended and extends the several subsidies in aid of the said company for four years from the passing of the said Act, that is to say, from the twenty-second day of May, one thousand eight hundred and eighty-eight.”

By the Special Act, 52 Vic., cap. 5, 1889 (*Assented to 2nd May, 1889*):—

- 185.** In order to enable the Qu'Appelle, Long Lake and Saskatchewan Railroad and Steamboat Company to complete their railway from Regina to some point on the South Saskatchewan River at or near Saskatoon, and thence northward to Prince Albert, the Governor in Council may enter into a contract with such company for the transport of men, supplies, materials and mails,



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for twenty years, and may pay for such services during the said term, eighty thousand dollars per annum in manner following, that is to say:—the sum of fifty thousand dollars to be paid annually on the construction of the railway to a point at or near Saskatoon, such payment to be computed from the date of the completion of the railway to such point; and the remaining thirty thousand dollars annually on the extension of the railway to Prince Albert, such payment to be computed from the date of such last mentioned completion: Provided that if the second portion of the said railway is not built and operated to Prince Albert within two years after the completion of the railway to the South Saskatchewan as aforesaid, the payment of fifty thousand dollars shall cease until the whole railway is finished to Prince Albert.

By the Act 53 Vic., cap. 2, 1890 (*Assented to 16th May, 1890*):—

<b>186.</b> To the Montreal and Ottawa Railway Company, for thirty miles of their railway, from the western end of the thirty-six miles subsidized by the Act 50-51 Victoria, chapter 24, towards Ottawa, a subsidy not exceeding \$3,200 per mile, and not exceeding in the whole.....	\$ 96,000
<b>187.</b> To the Waterloo Junction Railway Company, for eleven miles of their railway, from Waterloo to Elmira, a subsidy not exceeding \$3,200 per mile, and not exceeding in the whole.....	35,200
<b>188.</b> To the Northern and Pacific Junction Railway Company, for a railway from Gravenhurst to Callander, the balance remaining unpaid of the subsidies granted by the Acts 45 Victoria, chapter 14, and 46 Victoria, chapter 25, not exceeding in the whole...	600
<b>189.</b> For a railway from Woodstock via London to Chatham, in the province of Ontario, thirty miles in lieu of the subsidy granted by the Act 49 Victoria, chapter 10, for a railway from Ingersoll via London to Chatham, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	256,000
<b>190.</b> To the St. Catharines and Niagara Railway Company, for fourteen miles of their railway, from the end of the twenty miles subsidized by the Act 52 Victoria, chapter 3, to Hamilton, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	44,800
<b>191.</b> To a railway from Ottawa to Morrisburg, fifty-two miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole....	166,400
<b>192.</b> To the Erie and Huron Railway Company, for twenty-two miles of their railway from Petrolea via Oil Springs to Dresden, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	70,400
<b>193.</b> To the Brockville, Westport and Sault Ste. Marie Railway Company, for a railway from Brockville to Westport, the balance remaining unpaid of the subsidy granted by the Act 48-49 Victoria, chapter 59, not exceeding in the whole.....	83,000
<b>194.</b> To the Manitoulin and North Shore Railway Company, for thirty miles of their railway from Little Current to the Algoma Branch of the Canadian Pacific Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000
<b>195.</b> To the Port Arthur, Duluth and Western Railway Company, for five miles of their railway, being a branch of the main line of railway to the Kakabeka Falls, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	16,000
<b>196.</b> To the Lake Erie and Detroit River Railway Company, for fifty miles of their railway, on a line to be fixed by the Governor in Council, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	160,000

<b>197.</b> To the Lindsay, Bobcaygeon and Pontypool Railway Company, for sixteen miles of their railway, from Bobcaygeon to the Midland Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>\$ 51,200</b>
<b>198.</b> To the Kingston, Smith's Falls and Ottawa Railway Company, for thirty-six miles of their Railway, from the north-east end of the twenty miles subsidized by the Act 52 Victoria, chapter 3, to Smith's Falls, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>115,200</b>
<b>199.</b> To the Ottawa and Parry Sound Railway Company, for thirty miles of their railway, from Eganville to Barry's Bay, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>96,000</b>
<b>200.</b> To the Belleville and Lake Nipissing Railway Company, for thirty miles of their railway, from Belleville to Tweed and thence to Bridgewater, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>96,000</b>
<b>201.</b> To the Cobourg, Northumberland and Pacific Railway Company, for thirty miles of their railway from Cobourg to the Ontario and Quebec Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>96,000</b>
<b>202.</b> To the St. Stephen and Milltown Railway Company, for three and a half miles of their railway, from the town of St. Stephen to the town of Milltown, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>11,200</b>
<b>203.</b> To the Woodstock and Centreville Railway Company, for six miles of their railway, from the western end of the twenty miles subsidized by the Act 50-51 Vic., chap. 24, to the International boundary between the province of New Brunswick and the state of Maine, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>19,200</b>
<b>204.</b> For a railway from a point at or near Fredericton, via Oromocto and Gagetown, to a point on the New Brunswick Railway west of Westfield station, for thirty miles thereof, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>96,000</b>
<b>205.</b> To the Central Railway Company of New Brunswick, for four and a half miles of their railway, the distance which the previous subsidy granted is short of covering, from the head of Grand Lake to the Intercolonial Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>14,400</b>
<b>206.</b> To the Montreal and Western Railway Company, for seventy miles of their railway, from St. Jérôme, north-westerly towards Désert, in the province of Quebec, in lieu of the subsidy granted by the Act 49 Vic., chap. 10, a subsidy not exceeding \$5,161 per mile, nor exceeding in the whole.....	<b>361,270</b>

"Provided, that the subsidy hereby granted to the Montreal and Western Company may be paid by instalments on the completion of each section of the railway as follows, that is to say :—

SECTIONS.	Approximate length in miles.
St. Jérôme to Shawbridge.....	8
Shawbridge to St. Sauveur.....	4
St. Sauveur to Ste. Adèle.....	6
Ste. Adèle to Lac à la Fourche.....	6
Lac à la Fourche to Ste. Agathe.....	6½
Ste. Agathe to St. Faustin.....	14
St. Faustin to St. Jovite.....	7½
St. Jovite to Summit Lake.....	8
Summit Lake to La Chute aux Iroquois.....	7
La Chute aux Iroquois towards Désert.....	3



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“Such instalments to be proportionate to the value of the portions so completed in comparison with that of the whole work undertaken, to be established as aforesaid.”

<b>207.</b>	For seventy-five miles of the railway from Shelburne, in the county of Shelburne, and from Liverpool, in the county of Queen's towards Annapolis, in the province of Nova Scotia, to be so contracted for as to secure the construction to both Shelburne and Liverpool, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 240,000
<b>208.</b>	To the Inverness and Richmond Railway Company, for fifty miles of their railway from Port Hawkesbury to Broadcove, a subsidy not exceeding \$1,000 per mile, nor exceeding in the whole.....	50,000
<b>209.</b>	To the International Railway Company, for a railway from Sherbrooke to the international boundary, the balance remaining unpaid of the subsidy granted by the Act 46 Vic., chapter 25, not exceeding in the whole.....	3,840
<b>210.</b>	For completing the Montreal and Sorel Railway from St. Lambert to Sorel.....	40,000
<b>211.</b>	To the Pontiac Pacific Junction Railway Company, for seven and a half miles of their railway, from Hull to Aylmer, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	24,000
<b>212.</b>	To the Montreal and Lake Maskinongé Railway Company, for three and a half miles of their railway, the distance which the subsidy granted by the Act 49 Vic., chapter 10, is short of covering from St. Félix to Lake Maskinongé, in the parish of St. Gabriel, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	10,200
<b>213.</b>	To the Great Eastern Railway Company, for a bridge over the Nicolet River, and also a bridge on the St. Francis River, a subsidy of 15 per cent on the value of the structure, not to exceed.....	37,500
<b>214.</b>	To the Drummond County Railway Company, for twenty-four miles of their railway, from Drummondville to Ste. Rosalie, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	76,800
<b>215.</b>	To the Great Northern Railway Company, for fifteen miles of their railway, from, at or near Montcalm to the Canadian Pacific Railway, between Joliette and St. Félix de Valois, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000
<b>216.</b>	To the Lake Temiscamingue Colonization Railway Company, for twenty miles of their railway, from the northern end of the fifteen miles subsidized by the Act 52 Vic., chapter 3, to the Long Sault, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000
<b>217.</b>	To the Maskinongé and Nipissing Railway Company, for fifteen miles of their railway, from the northern end of the 15 miles subsidized by the Act 52 Victoria, chapter 3, towards the parish of St. Michel des Saints, on the River Mattawa, in the province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000
<b>218.</b>	To the St. Lawrence and Adirondack Railway Company, for eighteen miles of their railway, from Valleyfield to Huntingdon, on the Montreal and Champlain Junction Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	57,600
<b>219.</b>	To the Quebec Central Railway Company, for ninety miles of their railway, from St. Francis Station, on the Quebec Central Railway, to a point on the Atlantic and North-western Railway,	



near Moose River, or from a point on the Quebec Central Railway between the Chaudière River and Tring Station, to a point on the International Railway at or near Lake Megantic, in lieu of the subsidy granted by the Act 51 Victoria, chapter 3, a subsidy not exceeding \$21,191.54 per annum for twenty years, or a guarantee of a like sum for a like period, as interest on the bonds of the company, such annual subsidy for twenty years representing a grant in cash of.....		\$288,000
220.	To the Quebec and Lake St. John Railway Company, for a railway bridge over the St. Charles River, to give access to the city of Quebec, a subsidy not to exceed in the whole \$30,000; also for twelve miles of their railway from Lorette via Charlesbourg to Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole \$38,400.....	68,400
221.	For a railway from Summerside to Richmond Bay, in the province of Prince Edward Island, three miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	9,600
222.	To the Columbia and Kootenay Railway Company, for thirty-five miles of their railway, from the outlet of Kootenay Lake to a point on the Columbia River as near as practicable to the junction of the Kootenay and Columbia Rivers, a subsidy not exceeding \$3,200 per mile, nor to exceed in the whole.....	112,000
223.	For a railway from a point on the Intercolonial Railway through the Stewiacke Valley on a line which will afford facilities of communication with the Iron Mines, Springside, Upper Stewiacke and Musquodoboit settlements, twenty-five miles, in lieu of the subsidy granted by the Act 49 Victoria, chapter 10, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	80,000
224.	For a railway from Fredericton to the village of Prince William in the province of New Brunswick, twenty-two miles, in lieu of the subsidy granted by the Act 49 Victoria, chapter 10, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	70,400
225.	To the St. John Valley and Rivière du Loup Railway Company, for twenty-two miles of their railway from the village of Prince William towards the town of Woodstock, in lieu of the subsidy granted by the Act 50-51 Victoria, chapter 24, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	70,400
226.	To the Témiscouata Railway Company, for sixteen miles of their railway, from the west end of the twenty miles of their branch railway from Edmundston, subsidized by the Act 51 Victoria, chapter 3, towards the St. Francis River, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	51,200
227.	For a railway from the north end of the fourteen miles for which a subsidy was granted by the Act 50 and 51 Victoria, chapter 24, to the Tobique Valley Railway Company, from Perth Centre towards Plaister Rock Island, eleven miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	35,200
228.	To the Orford Mountain Railway Company, for thirty-one miles of their railway, between Eastman and Kingsbury, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	99,200
229.	For a railway from Lachine Bank, on a line of the Grand Trunk Railway, to a point at or near Rivière des Prairies, a distance of fifteen miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000

"The subsidies hereinbefore mentioned as to be granted to companies named for that purpose, shall be granted to such companies respectively; the other subsidies,

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including subsidies granted for railways over a line extending beyond a point to which any company hereinbefore mentioned by name is authorized to construct its railway, shall be granted to such companies as shall be approved by the Governor in Council as having established to his satisfaction their ability to construct and complete the said railways respectively. All the lines for the construction of which subsidies are granted shall be commenced within two years from the first day of July next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council,—except the Erie and Huron Railway, which shall be completed within two years from the first day of July next. And they shall also be constructed according to descriptions and specifications, and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specifying an agreement to be made in each case by the company with the Government, and which the Government is hereby empowered to make. The location, also, of every such line of railway shall be subject to the approval of the Governor in Council. And all the said subsidies respectively shall be payable out of the Consolidated Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon the completion of the work subsidized—except as regards the Erie and Huron Railway Company, upon which payment shall be made only upon the completion of the work—except, also as regards the subsidies to the Inverness and Richmond Railway, which shall be paid on the completion of each ten mile section, in accordance, as nearly as practicable, with the agreement between the company and the municipality of Inverness, and with section four of the Act of the Legislature of Nova Scotia, 1890, intituled: *An Act to enable the county of Inverness to borrow money*—except, also, as regards the subsidies to the Great Eastern Railway Company for bridges over the Nicolet and St. Francis Rivers, and to the Quebec and Lake St. John Railway for the bridge over the St. Charles River, upon which shall be paid fifteen per cent of the value of work done, on monthly progress estimates certified by the Chief Engineer and upon the approval of the Minister of Railways and Canals—and except also the subsidy granted to the Quebec Central Railway Company, the first annual payment upon which shall be made at the end of twelve months from the date of the Chief Engineer's certificate of the completion of the work, and each subsequent payment at the end of each twelve months thereafter, for the term of twenty years.

“The granting of such subsidies to the companies mentioned, respectively, shall be subject to such conditions for securing running powers or traffic arrangements or other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those subsidized, as the Governor in Council determines.”

By the special Act 53 Vic., ch. 5, 1890 (*Assented to 16th May, 1890*):—

**230.** In order to enable the Calgary and Edmonton Railway Company to construct so much of their railway as reaches from a point on the line of the Canadian Pacific Railway Company within the town of Calgary to a point on the North Saskatchewan River near Edmonton, the Governor in Council may enter into a contract with such company for the transport of men, supplies, materials and mails for twenty years, and may pay for such services during the said term, eighty thousand dollars per annum, in manner following, that is to say: the sum of eighty thousand dollars to be paid annually on the construction of the railway from Calgary to a point on the North Saskatchewan River near Edmonton,—such payment to be computed from the date of the completion of the railway between such points: Provided that the Governor General in Council may order such sums to be paid in semi-annual instalments, and may permit the company to assign the same by way of security for any bonds or securities which may be issued by the company in respect of the company's undertaking.

By 54-55 Victoria, ch. 8, 1891 (*Assented to 30th Sept., 1891*):—

**231.** To the Great Northern Railway Company, for a railway from a point at or near New Glasgow or St. Lin to or near to Montcalm, in the province of Quebec, eighteen miles, the balance



	remaining unpaid of the subsidy, not exceeding \$3,200 per mile, granted by the Act forty-ninth Victoria, chapter ten, nor exceeding in the whole.....	\$ 28,100 00
232.	To the Quebec and Lake St. John Railway Company, for the railway bridge over the St. Charles River to give access to the city of Quebec, the difference between the amount already paid to the company and the sum of \$30,000 mentioned as not to be exceeded by the Act fifty-third Victoria, chapter two, a subsidy not exceeding.....	5,250 00
233.	To the Oshawa Railway Company, for seven miles of their railway from Port Oshawa towards Raglan, in lieu of the subsidy for a like amount granted by the Act passed in the session held in the fiftieth and fifty-first years of Her Majesty's reign, chapter twenty-four, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	22,400 00
234.	To the St. Lawrence, Lower Laurentian and Saguenay Railway Company, for the section of their railway from Grand Piles, on the St. Maurice River to its junction with the Quebec and Lake St. John Railway, the balance remaining unpaid of the subsidy granted by the Act passed in the session held in the fiftieth and fifty-first years of Her Majesty's reign, chapter twenty-four, not exceeding in the whole.....	92,784 00
235.	To the Great Eastern Railway Company, for thirty-miles of their railway, from the River St. Francis to the Arthabaska Railway at St. Grégoire station, the balance remaining unpaid of the subsidy, not exceeding \$3,200 per mile, granted by the Act passed in the session held in the fiftieth and fifty-first years of Her Majesty's reign, chapter twenty-four, not exceeding in the whole.....	79,700 00
236.	To the South Ontario Pacific Railway Company, for forty-nine and one-half miles of their railway from Woodstock to Hamilton, in the province of Ontario, in lieu of the subsidy for a like amount granted by the Act fifty-second Victoria, chapter three, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	158,400 00
237.	To the Montreal and Ottawa Railway Company (formerly the Vaudreuil and Prescott Railway Company), for thirty miles of their railway from Vaudreuil towards Hawkesbury, the balance remaining unpaid of the subsidy granted by the Act passed in the session held in the fiftieth and fifty-first years of Her Majesty's reign, chapter twenty-four, not exceeding in the whole.....	46,040 00
238.	To the Tobique Valley Railway Company, for fourteen miles of their railway from Perth Centre station towards Plaister Rock Island, in lieu of the subsidy for a like amount granted by the Act passed in the session held in the fiftieth and fifty-first years of Her Majesty's reign, chapter twenty-four, a subsidy not exceeding \$6,400 per mile, nor exceeding in the whole....	89,600 00
239.	To the Kingston, Smith's Falls and Ottawa Railway Company for fifty-six miles of their railway from the city of Kingston to Smith's Falls, in lieu of the subsidies, not to exceed \$179,200, granted by the Acts fifty-second Victoria, chapter three, and fifty-third Victoria, chapter two, a subsidy not exceeding \$12,534 per annum, to be paid in semi-annual instalments of \$6,267 each, for twenty years, which represents a grant in cash of.....	179,200 00



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“ Provided, that upon the completion of twenty-eight miles of the said railway a semi-annual subsidy may be paid proportionate to the value of the portion so completed in comparison with that of the whole fifty-six miles ; Provided also, that the company may deposit with the Minister of Finance and Receiver General a sum not exceeding \$1,170,000, in consideration whereof there shall be paid to the company, for twenty years, a semi-annual annuity calculated on a basis of three and one-half per cent on the amount so deposited ; Provided further, that the Governor in Council may permit the company to assign the said subsidy and annuity to trustees by way of security for any bonds or securities which may be issued by the company in respect of their undertaking.”

**240.** To the Brockville, Westport and Sault Ste. Marie Railway Company, for twenty miles of their railway, from a point at or near Newboro' towards Palmer's Rapids, in the province of Ontario, in lieu of a subsidy for a like amount granted by the Act fifty-second Victoria, chapter three, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... \$64,000 00

“ Provided that the subsidy hereby granted to the Brockville, Westport and Sult Ste. Marie Railway Company may be paid by instalments, on the completion of each section of the railway as follows, that is to say :—

Sections.	Length in miles.
From, at or near Newboro' to Westport.....	4
From Westport towards Palmers Rapids.....	16

“ The subsidies hereinbefore mentioned as to be granted to companies named for that purpose shall be granted to such companies respectively ; all the lines for the construction of which subsidies are granted, unless they are already commenced, shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council ; and shall also be constructed according to descriptions and specifications and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals and specified in an agreement to be made in each case by the company with the Government, and which the Government is hereby empowered to make ; the location, also of every such line of railway, shall be subject to the approval of the Governor in Council ; and all the said subsidies respectively shall be payable out of the Consolidated Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon the completion of the work subsidized—except as to the subsidy granted to the Kingston, Smith's Falls and Ottawa Railway Company, the first semi-annual payment upon which shall be made at the end of six months from the date of the Chief Engineer's certificate of the completion of twenty-eight miles of the railway, and each subsequent payment at the end of each six months thereafter, for the term of twenty years,—except also as to the Quebec and Lake St. John Railway Company, the subsidy to which shall be paid upon the completion of the work,—except also as to the Brockville, Westport and Sault Ste. Marie Railway Company, the subsidy to which shall be paid as follows : on the completion of that portion of the said road from, at or near Newboro' to Westport, a distance of four miles, the sum of twelve thousand eight hundred dollars, and on the completion of the remaining sixteen miles from Westport towards Palmer's Rapids, the sum of fifty-one thousand two hundred dollars.

“ Within one month after the commencement of each session of Parliament, whilst any of the said moneys are being paid out, there shall be laid before Parliament a statement showing all payments of such moneys during the then next preceding year, the names of the respective persons to whom such payments have been made, and the amounts paid them respectively, together with the engineer's report upon which pay-

ments have been recommended, and copies of all contracts between the Government and the company under which the said subsidies are authorized to be paid.

"The granting of such subsidies respectively shall be subject to such conditions for securing such running power or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council determines.

By the Act 55-56 Victoria, chap. 5, 1892 (*Assented to 9th July, 1892*):—

<b>241.</b>	To the Lake Erie and Detroit River Railway Company, for fifty-eight miles of their railway from a point at or near Cedar Creek to the town of Ridgetown, in lieu of the subsidies granted to the Lake Erie and Detroit River Railway Company by the Act 53 Victoria, chapter 2, and to the Amherstburg, Lake Shore and Blenheim Railway Company by the Act 52 Victoria, ch. 3.	\$224,000 00
<b>242.</b>	To the Ottawa, Arnprior and Parry Sound Railway Company, for fifty-five miles of their railway from Barry's Bay towards the Northern Pacific Junction Railway, a subsidy not exceeding \$6,400 per mile on the first twenty-seven and a half miles out from Barry's Bay, and not exceeding \$3,200 per mile on the second twenty-seven and a half miles, nor exceeding in the whole.	264,000 00
<b>243.</b>	To the Canadian Pacific Railway Company or to the Columbia and Kootenay Railway and Navigation Company, for a railway from a point on the Canadian Pacific Railway at or near Revelstoke to the head of Arrow Lake, for twenty-five miles of such railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	80,000 00
<b>244.</b>	To the Tobique Valley Railway Company, for a railway from the north end of the eleven miles for which a subsidy was granted by the Act 53 Victoria, chapter 2, to Plaister Rock Island, for 3 miles of such railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	9,600 00
<b>245.</b>	To the Monfort Colonization Railway Company, for twenty-one miles of their railway from Lachute, St. Jérôme or a point at or near St. Sauveur, on the line of the Montreal and Western Railway, to Monfort and westward, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	67,200 00
<b>246.</b>	To the Ontario, Belmont and Northern Railway Company, for ten miles of their railway from the Belmont iron mines to the Canadian Pacific Railway and the Central Ontario Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	32,000 00
<b>247.</b>	To the Montreal and Champlain Junction Railway Company, the balance remaining unpaid of the subsidies granted by the Acts 50-51 Victoria, chapter 24, and 51 Victoria, chapter 3, a subsidy of.	15,100 00
<b>248.</b>	To the Buctouche and Moncton Railway Company, for thirty-two miles of their railway from Moncton to Buctouche, the balance remaining unpaid of the subsidy, not exceeding \$3,200 per mile, granted by the Acts 49 Victoria, chapter 10, and 50-51 Victoria, chapter 24, not exceeding in the whole.	35,480 00
<b>249.</b>	To the Cobourg, Northumberland and Pacific Railway Company, for nineteen miles of their railway from Cobourg to the Ontario and Quebec Railway (in addition to the subsidy granted by the Act 53 Victoria, chapter 2), a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	60,800 00



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<b>250.</b>	For a railway from the parish of St. Rémi, in the county of Napierville, to St. Cyprien in the said county, for twelve miles of such railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 38,400 00
<b>251.</b>	To the Inverness and Richmond Railway Company (or any other company undertaking the work), for twenty-five miles of their railway from a point on the Cape Breton Railway, at or near Orangedale, to Broadcove, a subsidy not exceeding \$3,200 per mile, in lieu of the subsidy of \$50,000 granted to the said railway company by 53 Victoria, chapter 2, and on the same conditions, not exceeding in the whole.....	80,000 00
<b>252.</b>	To the Nicola Valley Railway Company, for twenty-five miles of their railway from a point on the Canadian Pacific Railway at or near Spence's Bridge towards Nicola Lake .....	80,000 00
<b>253.</b>	To the Lotbinière and Megantic Railway Company, for fifteen miles of their railway from a point at or near St. Jean Deschailons towards Glen Lloyd, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00
<b>254.</b>	To the Stewiacke and Lansdowne Railway Company, for a railway from a point on the Intercolonial Railway, through the Stewiacke Valley, on a line which will afford facilities of communication with the iron mines at Springside, Upper Stewiacke and Musquodoboit settlements, twenty-five miles, in lieu of the subsidy granted by the Act 53 Victoria, chapter 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	80,000 00
<b>255.</b>	To the Philipsburg Junction Railway and Quarry Company, for six and seven-hundredths miles of their railway from Stanbridge Station to Philipsburg, in the county of Missisquoi, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole . . .	21,600 00
<b>256.</b>	To the Kingston, Napanee and Western Railway Company, for three miles of their railway from a point at or near Harrowsmith to a point at or near Sydenham, in lieu of the subsidy granted for this section of road by the Act 52 Victoria, chapter 3, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole .....	9,600 00
<b>257.</b>	For a railway from Cape Tourmente towards Murray Bay, in the province of Quebec, twenty miles, in lieu of the subsidy granted by the Act 52 Victoria, chapter 3, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole .....	64,000 00
<b>258.</b>	To the Stewiacke and Lansdowne Railway Company, for a railway from Truro, or a point between Truro and Stewiacke, to Newport or to Windsor, in the province of Nova Scotia, for forty-nine miles of such railway, in lieu of the subsidy granted by the Act 52 Victoria, chapter 3, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole .....	156,800 00
<b>259.</b>	To the Restigouche and Victoria Railway Company, for fifteen miles of their railway from Campbellton towards Grand Falls, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00
<b>260.</b>	For a railway from St. Johns to Ste. Rosalie, thirty-two miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	102,400 00
<b>261.</b>	For a railway from St. Placide to St. Andrew's, eight miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..	25,600 00
<b>262.</b>	For a railway to complete the connection between Sydney and Louisburg, in the county of Cape Breton, for twenty-eight miles of such railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	89,600 00



- 263.** To the Belleville and Lake Nipissing Railway Company, for thirty miles of their railway from Belleville to Tweed and thence to Bridgewater, in lieu of the subsidy granted by the Act 53 Victoria, chapter 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... \$ 96,000 00
- 264.** To the Kingston, Smith's Falls and Ottawa Railway Company, for fifty-six miles of their railway from the city of Kingston to Smith's Falls, in lieu of the subsidies, not to exceed \$179,200, granted by the Acts 52 Victoria, chapter 3, and 53 Victoria, chapter 2, a subsidy calculated on a basis of three and a half per cent on the amount of such subsidies so granted, to be paid in semi-annual instalments for such period not exceeding twenty-one years, as the company may elect, which represents a grant in cash of..... 179,200 00

“ Provided, that upon the completion of twenty-eight miles of the said railway a semi-annual subsidy may be paid proportionate to the value of the portion so completed in comparison with that of the whole fifty-six miles : Provided also, that the company may deposit with the Minister of Finance and Receiver General, a sum not exceeding \$1,170,000, in consideration whereof there shall be paid to the company for such period not exceeding twenty years as the company may elect, a semi-annual annuity calculated on a basis of three and a half per cent on the amount so deposited. Provided further, that the Governor in Council may permit the company to assign the said subsidy and annuity to trustees by way of security for any bonds or securities which may be issued by the company in respect of their undertaking.”

- 265.** To the St. Catharines and Niagara Central Railway Company, for thirty-four miles of their railway from the city of St. Catharines to the city of Hamilton, in lieu of the subsidies, not to exceed \$108,000, granted by the Acts 52 Victoria, chapter 3, and 53 Victoria, chapter 2, a subsidy calculated on a basis of three and a half per cent on the amount of the said subsidies, to be paid in semi-annual instalments for such period, not exceeding twenty years, as the company may elect, representing a grant in cash of \$108,000 : Provided that, upon the completion of ten miles of said railway, a semi-annual subsidy may be paid proportionate to the value of the portion so completed in comparison with that of the whole thirty-four miles. Provided also, that the company may deposit with the Minister of Finance and Receiver General a sum not exceeding \$400,000, in consideration whereof there shall be paid by the Government to the company, for such period not exceeding twenty years, as the company may elect, a semi-annual annuity, calculated on a basis of three and a half per cent on the amount so deposited, or a guarantee of a like sum, as interest on the bonds of the company : Provided further, that the company, with the approval of the Governor in Council, may assign the said subsidy and annuity to trustees by way of security for principal, or interest of any bonds or securities which may be issued by the company in respect of their undertaking, and the subsidy last above mentioned to the St. Catharines and Niagara Central Railway Company shall be paid in instalments, the first semi-annual payment upon which shall be made at the end of the six months from the date of the Chief Engineer's certificate of the completion of the first ten miles of railway, and each subsequent payment at the end of six months thereafter, for the term of twenty years or less. It is a condition of this subsidy that the sum not exceeding \$400,000 above mentioned shall be deposited with the Finance Minister before January 1st, 1893.

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<b>266.</b> To the Woodstock and Centreville Railway Company, for a railway from Woodstock towards Centreville, twenty miles, in lieu of the subsidy granted by 50-51 Victoria, chapter 24, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$64,000 00
<b>267.</b> To the Brockville, Westport and Sault Ste. Marie Railway Company, for the balance remaining unpaid of the subsidy granted by the Act 52 Victoria, chapter 3, not exceeding \$3,200 per mile, and also for the balance remaining unpaid of the subsidy granted by the Act 53 Victoria, chapter 2, nor exceeding in the whole.....	96,800 00
<b>268.</b> To the New Glasgow Iron, Coal and Railway Company, for a railway from Eureka Junction on the Intercolonial Railway to a point at or near Sunnybrae, including a branch line to the charcoal iron furnace at Bridgeville, for twelve and a half miles of such railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	40,000 00
<b>269.</b> To the Thousand Island Railway Company, for an extension of their railway to connect with the Brockville, Westport and Sault Ste. Marie Railway, the Kingston, Napanee and Western Railway, the Kingston, Smith's Falls and Ottawa Railway, or the waters of the Rideau Canal, and an extension across the mouth of the Gananoque River, the balance remaining unpaid of the subsidy granted by the Act 52 Victoria, chapter 3, not exceeding in the whole.....	44,000 00
Payable, \$14,000 on the completion of the last named or southern extension, and the balance of said subsidy, being \$30,000, on the completion of the first named or northern extension of their railway.	
<b>270.</b> To the Manitoulin and North Shore Railway Company, for thirty miles of their railway from Little Current to the Algoma Branch of the Canadian Pacific Railway, in lieu of the subsidy granted by the Act 53 Victoria, chapter 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$96,000 00
<b>271.</b> To the Lindsay, Bobcaygeon and Pontypool Railway Company, for sixteen miles of their railway from the end of the line subsidized by the Act 53 Victoria, chapter 2, at the junction with the Midland Railway, to Pontypool, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	51,200 00
<b>272.</b> For seventy-five miles of the railway from Sand Point, Shelburne Harbour, in Nova Scotia, to Annapolis Royal, in the county of Annapolis and to a junction at or near New Germany on the Nova Scotia Central Railway, with a view to future construction to Liverpool, in lieu of the subsidy of a like amount granted by the Act 53 Victoria, chapter 2, for the same length of railway from Shelburne and from Liverpool, towards Annapolis, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	240,000 00
<b>273.</b> To the Kingston, Napanee and Western Railway Company, for twenty miles of their railway, being extensions or branches in the counties of Peterborough, Hastings, Addington, Frontenac or Leeds, towards iron deposits, a subsidy not exceeding \$3,200 per mile, payable in instalments regulated by the length of each of the said extensions, additions or branches, the subsidy not exceeding in the whole.....	64,000 00
<b>274.</b> To the St. John Valley and Rivière du Loup Railway Company, for ten miles of their railway from the north end of the line subsidized by the Act 53 Victoria, chapter 2, towards the town of Woodstock, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00



<b>275.</b> To the Cobourg, Northumberland and Pacific Railway Company, for thirty miles of their railway from Cobourg to the Ontario and Quebec Railway, in lieu of the subsidy granted by the Act 53 Victoria, chapter 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 96,000 00
<b>276.</b> To the Ottawa, Arnprior and Parry Sound Railway Company, for thirty miles of their railway, from Eganville to Barry's Bay, in lieu of the subsidy granted by the Act 53 Victoria, chapter 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000 00
<b>277.</b> To the Ottawa, Arnprior and Parry Sound Railway Company, for twenty-two miles of their railway from a point on the Canadian Pacific Railway to Eganville, in lieu of the subsidy granted by the Act 51 Victoria, chapter 3, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	70,400 00
<b>278.</b> To the Lake Témiscamingue Colonization Railway Company, for thirty-five miles of their railway from Mattawa to the Long Sault, in lieu of the subsidies granted by the Acts 52 Victoria, chapter 3, and 53 Victoria, chapter 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	112,000 00
<b>279.</b> To the Témiscouata Railway Company, for twelve miles of their railway from the north end of the section of the St. François Branch subsidized by the Act 51 Victoria, chapter 3, being the first twelve miles on the section subsidized by the Act 53 Victoria, chapter 2, a subsidy not exceeding \$1,800 per mile, in addition to the subsidy already granted, and not exceeding in the whole.....	21,600 00
<b>280.</b> To the Tilsonburg, Lake Erie and Pacific Railway Company, for sixteen miles of their railway from Port Burwell to Tilsonburg, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	51,200 00
<b>281.</b> To the Woodstock and Centreville Railway Company, for six miles of their railway from the west end of their twenty miles subsidized by the Act 50-51 Victoria, chapter 24, to the international boundary between the province of New Brunswick and the state of Maine, in lieu of the subsidy granted by the Act 53 Victoria, chapter 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	19,200 00
<b>282.</b> To the Lake Témiscamingue Colonization Railway Company, for 15 miles of their railway from the Long Sault to the crossing of the Kippewa River, a subsidy not exceeding \$3,200 per mile—and a subsidy of fifteen per cent on the value of a wooden truss bridge over the Ottawa River near Mattawa, not exceeding \$15,000,—nor exceeding in the whole.....	63,000 00
<b>283.</b> To the Goderich and Wingham Railway Company, for thirty-one miles of their railway from Goderich to Wingham, via Port Albert, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	99,200 00
<b>284.</b> To the Joliette and St. Jean de Matha Railway Company, for eight miles of their railway from St. Félix de Valois to St. Jean de Matha, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	25,600 00
<b>285.</b> To the Bracebridge and Baysville Railway Company, for fifteen miles of their railway from Bracebridge towards Baysville, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00
<b>286.</b> To the Nipissing and James Bay Railway Company, for twenty-five miles of their railway from, at or near North Bay station on	



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	the Canadian Pacific Railway towards James Bay, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 80,000 00
<b>287.</b>	For a railway from a point on the Intercolonial Railway between Ste. Flavie and Little Métis station to Matane, for fifty miles of such railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	160,000 00
<b>288.</b>	To the Ontario and Pacific Railway Company, for fifty-three and eighty-seven hundredths miles of their railway from Cornwall to Ottawa, in lieu of the subsidy granted by the Act 52 Victoria, chapter 3, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	172,400 00
<b>289.</b>	For a railway from a point on the line of the Canadian Pacific Railway on the Isle Jésus, in the county of Laval, towards St. Eustache, for twelve miles of such railway, in lieu of the subsidy granted by the Act 50-51 Victoria, chapter 24, to the Carillon and Grenville Railway Company, for twelve miles of their railway, from St. Eustache to Sault au Récollet, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	38,400 00
<b>290.</b>	For a railway from St. Eustache to St. Placide, in the county of Two Mountains, for eighteen miles of such railway, in lieu of the subsidy granted by the Act 49 Victoria, chapter 10, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	57,600 00
<b>291.</b>	To the Port Arthur, Duluth and Western Railway Company, the balance remaining unpaid of the subsidy granted by the Act 51 Victoria, chapter 3, not exceeding, with the amount already paid, \$3,200 per mile, nor exceeding in the whole.....	114,125 00
<b>292.</b>	To the Drummond County Railway Company for four and six-tenths miles of their railway from Bull's Wharf, on the St. Lawrence River, near Nicolet, to Ste. Rosalie Junction, an excess of distance by the constructed line over the subsidies heretofore voted for a railway between the said points, \$3,200 per mile, not exceeding in the whole.....	14,720 00
<b>293.</b>	To the St. Lawrence and Adirondack Railway Company, for five and forty-two hundredths miles of their railway, from Huntingdon towards the international boundary, which, with the distance between Valleyfield and Huntingdon, twelve and fifty-eight hundredths miles, makes up the distance of eighteen miles named in the 53 Vic., chap. 2, granting a subsidy to this company, and for five and forty-hundredths miles from the east end of the eighteen miles referred to to the international boundary, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	25,024 00

“ The subsidies hereinbefore mentioned as to be granted to companies named for that purpose shall, if granted by the Governor in Council, be granted to such companies respectively ; the other subsidies may be granted to such companies as shall be approved by the Governor in Council as having established to his satisfaction their ability to construct and complete the said railways respectively ; all the lines for the construction of which subsidies are granted, unless they are already commenced, shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council, and shall also be constructed according to descriptions and specifications, and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made in each case by the company with the Government, which agreement the Government is hereby empowered to make ; the location also of every such line of railway shall be subject to the approval of the Governor in Council ; and all the said subsidies respectively shall be payable out of the Consolidated



Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon the completion of the work subsidized,—except as to subsidies with respect to which it is hereinbefore otherwise provided, and except also as to the subsidy granted to the Kingston, Smith's Falls and Ottawa Railway Company, and the subsidy granted to the St. Catharines and Niagara Central Railway Company, the first semi-annual payments upon both of which shall be made at the end of six months from the date of the Chief Engineer's certificate of the completion of their railways respectively, and each subsequent payment at the end of each six months thereafter, for the term of twenty years or less.

"The granting of such subsidies respectively shall be subject to such conditions for securing such running powers or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council determines."

**294.** Notwithstanding the expiration of the time limited by the Act 47 Victoria, chapter 8, and by the contract entered into with the Pontiac Pacific Junction Railway Company, the Governor in council may pay the balance remaining unpaid of the subsidy granted by the said Act to the said company, according as it becomes due and payable in accordance with the said contract, and subject to the terms and conditions applicable to the said subsidy under the terms of the said Act.

**295.** Notwithstanding the expiration of the time limited by the Act 52 Victoria, chapter 3, and by the contract entered into with the Quebec and Lake St. John Railway Company, the Governor in Council may pay the balance remaining unpaid of the subsidy granted by the said Act to the said company, according as it becomes due and payable in accordance with the said contract, and subject to the terms and conditions applicable to the said subsidy under the terms of the said Act; and notwithstanding anything contained in the Act 50-51 Victoria, chapter 24, the Governor in Council may also pay to the said company the balance remaining unpaid of the subsidy granted to the company by the said Act, amounting to \$12,800, on the four miles of their road from the north end of the main line subsidized towards Roberval.

By the Act 56 Vic., chap. 2, 1893 (*Assented to 1st April, 1893*):—

- |   |              |
|---|--------------|
| <b>296.</b> To the Great Eastern Railway Company, for twenty miles of their railway, from the east end of the line subsidized by the Act 50-51 Victoria, chapter 24, at St. Grégoire, towards the Chaudière Junction station on the Intercolonial Railway, in the province of Quebec, in lieu of the subsidy granted by the Act 52 Victoria, chapter 3, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole..... | \$ 64,000 00 |
| <b>297.</b> To the United Counties Railway Company, for thirty-two miles of their railway, from a point at or near the town of Iberville to St. Hyacinthe, and thence towards Sorel, in lieu of the subsidy granted by the Act 55-56 Victoria, chapter 5, for a railway from St. Johns to Ste. Rosalie, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....   | 102,400 00   |
| <b>298.</b> To the Ontario, Belmont and Northern Railway Company, for ten miles of their railway, divided into two sections: first, from the Belmont Iron Mines to Marmora village; second, from Marmora village to the junction with the Ontario Central Railway, in lieu of the subsidy granted by the Act 55-56 Victoria, chapter 5, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....                 | 32,000 00    |
| <b>299.</b> To the Central Ontario Railway Company, for twenty miles of their railway, from Coe Hill or Gilmore, or some point between  |              |

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	Coe Hill and Gilmore <sup>8</sup> , to Bancroft, via L'Amable, or as near thereto as practicable, in lieu of the subsidy granted by the Act 48-49 Victoria, chapter 59, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 64,000 00
<b>300.</b>	To the Quebec and Lake St. John Railway Company, for thirty miles of their railway, from Lake St. John towards Chicoutimi, the balance remaining unpaid of the subsidy granted by the Act 51 Victoria, chapter 3, not exceeding in the whole.....	81,040 00
<b>301.</b>	To the Irondale, Bancroft and Ottawa Railway Company, for fifty miles of their railway, from the Victoria branch of the Midland Railway to the village of Bancroft, in the county of Hastings, the balance remaining unpaid of the subsidy granted by the Act 47 Victoria, chapter 8, and again granted by the Act 52 Victoria, chapter 3, not exceeding in the whole.....	145,000 00
<b>302.</b>	To the Beauharnois Junction Railway Company, for thirty miles of their railway, from Ste. Martine towards St. Anicet, the balance remaining unpaid of the subsidy granted by the Act 50-51 Victoria, chapter 24, not exceeding in the whole.....	3,500 00
<b>303.</b>	To the St. Stephen and Milltown Railway Company, for three and a half miles of their railway, from the town of St. Stephen to the town of Milltown, in lieu of the subsidy granted by the Act 53 Victoria, chapter 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	11,200 00
<b>304.</b>	To the Quebec, Montmorency and Charlevoix Railway Company, for thirty miles of their railway, from the east bank of the River St. Charles, to or near to Cape Tourmente, in the province of Quebec, the balance remaining unpaid of the subsidy granted by the Act 52 Victoria, chapter 3, not exceeding in the whole..	30,400 00
<b>305.</b>	To the Ottawa and Gatineau Valley Railway Company, for sixty-two miles of their railway, from Hull station towards Le Désert, the balance remaining unpaid of the subsidy granted by the Act 52 Victoria, chapter 3, not exceeding in the whole.....	89,248 00
<b>306.</b>	To the Grand Trunk, Georgian Bay and Lake Erie Railway Company, for fifteen miles of their railway, from the village of Tara, or some point between Tara and Hepworth, to the town of Owen Sound, in the province of Ontario, in lieu of the subsidy granted by the Act 52 Victoria, chapter 3, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000 00
<b>307.</b>	To the Nova Scotia Central Railway Company (or to such person or persons or company as in the opinion of the Minister or acting Minister of Justice are entitled to the same) for eighty miles of their railway, from Lunenburg, on the east coast of Nova Scotia, westward to a point in the district of New Germany, together with a spur about three-fourths mile long to Bridgewater railway wharf, and from a point thirty-three and a half miles from Lunenburg and running to Middleton on the Windsor and Annapolis Railway, of unpaid subsidies granted by the Acts 50-51 Victoria, chapter 24, and 51 Victoria, chapter 3, an amount not exceeding in the whole.....	4,500 00
<b>308.</b>	To the Great Northern Railway Company, for eighteen miles of their railway, from a point at or near New Glasgow or St. Lin, to or near to Montcalm, in the province of Quebec, the balance remaining unpaid of the subsidy granted by the Act 54-55 Victoria, chapter 8, not exceeding in the whole.....	25,600 00
<b>309.</b>	To the Great Northern Railway Company, for fifteen miles of their railway, from, at or near Montcalm to the Canadian Pacific	



	Railway between Joliette and St. Félix de Valois, in lieu of the subsidy granted by the Act 53 Victoria, chap. 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 48,000 00
<b>310.</b>	To the Montfort Colonization Railway Company, for twenty-one miles of their three-feet gauge railway from Lachute, St. Jérôme, or a point at or near St. Sauveur, on the line of the Montreal and Western Railway, to Montfort and westward, in lieu of the subsidy granted by the Act 55-56 Victoria, chapter 5, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	67,200 00
<b>311.</b>	To the Maskinongé and Nipissing Railway Company, for fifteen miles of their railway, from a point on the Canadian Pacific Railway at or near Maskinongé or Louiseville, towards the parish of St. Michel des Saints, on the river Mattawa, in the province of Quebec, and for fifteen miles of their railway from the north end of the fifteen miles above referred to, towards the parish of St. Michel des Saints on the river Mattawa, in the province of Quebec, in lieu of the subsidies granted by the Acts 52 Victoria, chap. 3, and 53 Victoria, chap. 2, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000 00
<b>312.</b>	To the Parry Sound Colonization Railway Company, for forty miles of their railway, from the village of Parry Sound to the village of Sundridge, or some other point on the Northern Pacific Junction Railway, in the province of Ontario, the balance remaining unpaid of the subsidy granted by the Act 52 Victoria, chapter 3, not exceeding in the whole.....	97,600 00
<b>313.</b>	To the Jacques Cartier Union Railway Company, for extending and completing their railway, in lieu of the subsidy granted by the Act 50-51 Victoria, chapter 24, a subsidy of.....	20,000 00
<b>314.</b>	To the Oshawa Railway Company, for seven miles of their railway and branches as follows: from Port Oshawa to a point at or near Edmondson's Falls mill site, near Mill Street, in the town of Oshawa (this portion being known as the "Lake" section of the said railway); thence to a point at or near the town hall in the town of Oshawa, and thence to the Oshawa station of the Grand Trunk Railway Company of Canada (this portion being known as the "Town" or "Northern" section of the said railway)—in lieu of the subsidy granted by the Act 54-55 Victoria, chapter 8, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	22,400 00

"All the lines for the construction of which subsidies are granted, unless they are already commenced, shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council, and shall also be constructed according to descriptions and specifications and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made in each case by the company with the Government, which agreement the Government is hereby empowered to make; the location, also, of every such line of railway shall be subject to the approval of the Governor in Council.

"The granting of such subsidies respectively shall be subject to such conditions for securing such running powers or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council determines.

"All the said subsidies respectively shall be payable out of the Consolidated Revenue Fund of Canada, by instalments on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed

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in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon the completion of the work subsidized,—except as follows :—

“(a.) The subsidy to the Ontario, Belmont and Ottawa Railway Company, which shall be paid as follows : on the completion of the first section, an instalment proportionate to the value of the said section in comparison with that of the ten miles hereby subsidized, to be established as aforesaid, and the balance of the said subsidy on the completion of the second section ;

“(b.) The subsidy to the Oshawa Railway Company, which shall be paid as follows : on the completion of the “ Town ” or “ Northern ” section, an instalment proportionate to the value of the said section in comparison with that of the seven miles hereby subsidized, to be established as aforesaid, and the balance of the said subsidy, on the completion of the “ Lake ” section of the said railway.”

By the Act 57-58 Vic., cap. 4, 1894. (*Assented to, 23rd July, 1894*) :—

<b>315.</b>	To the Bracebridge and Baysville Railway Company, for fifteen miles of their railway from Bracebridge towards Baysville, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 48,000
<b>316.</b>	To the Brockville, Westport and Sault Ste. Marie Railway, the balance remaining unpaid of the subsidy granted by chapter 3 of 1889, not exceeding \$3,200 per mile, and also the balance remaining unpaid of the subsidy granted by chapter 2 of 1890, which was re-granted by chapter 5 of 1892 ; the whole not exceeding .....	86,800
<b>317.</b>	To the Tilsonburg, Lake Erie and Pacific Railway Company, for sixteen miles of their railway, from Port Burwell to Tilsonburg, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole ....	51,200
<b>318.</b>	To the Brantford, Waterloo and Lake Erie Railway Company, for eighteen miles of their railway, from the town of Brantford to the village of Hagarsville or the village of Waterford, or some intermediate point on the Canada Southern Railway, the balance remaining unpaid of the subsidy granted by chapter 24 of 1887, not exceeding \$3,200 per mile, nor exceeding in the whole ....	4,790
<b>319.</b>	To the St. Catharines and Niagara Central Railway Company, for 34 miles of their railway from the city of St. Catharines to the city of Hamilton, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	108,800
<b>320.</b>	To the Montreal and Ottawa Railway Company (formerly the Vaudreuil and Prescott Railway Company), for thirty miles of their railway from Vaudreuil towards Hawkesbury, the balance remaining unpaid of the subsidy granted by chapter 24 of 1887 ; and for 30 miles of their railway from the western end of the 30 miles first mentioned towards Ottawa, the balance remaining unpaid of the subsidy granted by chapter 2 of 1890, not exceeding \$3,200 per mile ; the whole not exceeding.....	118,400
<b>321.</b>	Notwithstanding the expiration of the time limited by chapter 2 of 1890, and by the contract entered into with the Quebec Central Railway Company, and notwithstanding anything otherwise in the said chapter 2 contained, the Governor in Council may pay the subsidy granted by the said chapter to the said company at the present worth of the twenty annual payments mentioned in the said chapter (interest computed at four per cent), for and upon the completion of its railway extending from a point between the Chaudière River and Tring Station to a point on the International Railway at or near Lake Megantic, and upon the inspection and acceptance of the same by the Chief Engineer of Railways and Canals, the sum in all of .....	288,000



<b>322.</b> To the Philipsburg Junction Railway and Quarry Company, for $\frac{67}{100}$ mile of their railway from Stanbridge Station to Philipsburg, in the county of Missisquoi and a branch to Missisquoi Bay, the balance remaining unpaid of the subsidy granted by chapter 5 of 1892, not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>\$ 2,912</b>
<b>323.</b> To the Joliette and St. Jean de Matha Railway Company, for 8 miles of their railway from St. Félix de Valois to St. Jean de Matha, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>33,600</b>
<b>324.</b> To the Lake Temiscamingue Colonization Railway Company, for their railway from Mattawa to the foot of the Kippewa Lake, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole \$160,000,—also 15 per cent on the value of a wooden truss bridge over the Ottawa River near Mattawa, not to exceed \$15,000 in all, in lieu of the subsidies granted by chapter 5 of 1892,—also the balance remaining unpaid of the subsidy granted by chapter 24 of 1887, for their railway from Long Sault to Lake Kippewa, a subsidy not exceeding \$3,200 per mile of railway and 15 per cent on the value of the bridges,—also, a sum of \$1,750 additional per mile on their said railway from Mattawa to the foot of the Kippewa Lake; the whole not exceeding.....	<b>274,940</b>
<b>325.</b> For a railway from St. Placide to St. Andrews, 8 miles, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole .....	<b>25,600</b>
<b>326.</b> For a railway from St. Eustache to St. Placide, in the county of Two Mountains, for 18 miles of such railway, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>57,600</b>
<b>327.</b> For a railway from a point on the line of the Canadian Pacific Railway on Isle Jésus, in the county of Laval, towards St. Eustache, for 12 miles of such railway, in lieu of the subsidy granted by chapter 5 of 1892, to the Carillon and Grenville Railway Company, for 12 miles of their railway, from St. Eustache to Sault au Récollet, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	<b>38,400</b>
<b>328.</b> For a railway from the parish of St. Rémi, in the county of Napierville, to St. Cyprien, in the said county, for 12 miles of such railway, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole .....	<b>38,400</b>
<b>329.</b> To the Pontiac Pacific Junction Railway Company, for bridging the several channels of the Ottawa River at Culbute and west thereof, a subsidy of \$31,500, to be paid out monthly as the work progresses, upon the certificate of the chief engineer of government railways, in the proportion which the value of the work executed bears to the value of the whole work undertaken; and for 3 miles of their railway extending from a point 3 miles east of Pembroke to Pembroke, in the province of Ontario, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole \$9,600, in lieu of the subsidy granted by chapter 3 of 1888; provided that the entire work subsidized upon this railway shall be completed within 4 years from the passing of this Act; the subsidy granted by this Act not to exceed in the whole.....	<b>41,100</b>



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<b>330.</b> To the Pontiac Pacific Junction Railway Company, for the construction or acquisition of $7\frac{1}{2}$ miles of railway, from Hull to Aylmer, in lieu of the subsidy granted by chapter 2 of 1890, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	\$ 24,000
<b>331.</b> To the Pontiac Pacific Junction Railway Company, for 85 miles of their railway from Aylmer to Pembroke, the balance remaining unpaid of the subsidy granted by chapter 8 of 1884, less the subsidy granted for the line from Hull to Aylmer, provided the Ottawa River is crossed at some point not east of Lapasse, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole	73,172
<b>332.</b> To the Harvey Branch Railway Company, for 3 miles of their railway from the southern terminus of the Albert Railway to Harvey Bank, the balance remaining unpaid of the subsidy granted by chapter 24 of 1887, not exceeding \$3,200 per mile, nor exceeding in the whole.....	4,046
<b>333.</b> For a railway from a point on the Intercolonial Railway near Newcastle via Douglastown, to a point on the River Miramichi opposite the town of Chatham, in the province of New Brunswick, 6 miles, in lieu of the subsidy granted by chapter 10 of 1886, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	19,200
<b>334.</b> For a railway from some point on the Joggins Railway, near the Hebert River, to Young's Mills, in the province of Nova Scotia, a distance of 5 miles, in lieu of the subsidy granted by chapter 3 of 1889, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	16,000
<b>335.</b> To the Woodstock and Centreville Railway Company, for a railway from Woodstock to the international boundary between the province of New Brunswick and the state of Maine, 26 miles, in lieu of the subsidies granted by chapter 24 of 1887 and chapter 2 of 1890 a subsidy not exceeding \$3,200 per mile nor exceeding in the whole.....	83,200
<b>336.</b> For 90 miles of the railway from Newport or Windsor to Truro, or to a point between Truro and Stewiacke, and from a point on the said railway to a point at or near Eastville, and from Eastville through the valley of the Musquodoboit River towards a point on the proposed Dartmouth branch of the Intercolonial, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile; and also for a railway bridge over the Shubenacadie River on the line of the said railway, a subsidy of 15 per cent on the value of the structure; the whole not exceeding.....	300,000
<b>337.</b> To the Nipissing and James Bay Railway Company, for 25 miles of their railway from, at or near North Bay Station on the Canadian Pacific Railway towards James Bay, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile; also for 43 miles of their railway from North Bay towards Lake Tamagaming, a subsidy not exceeding \$3,200 per mile; the whole not exceeding.....	217,000
<b>338.</b> To the Lotbinière and Mégantic Railway Company, for 15 miles of their railway, in addition to the 15 miles already subsidized and built, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000
<b>339.</b> To the Drummond County Railway Company, for 30 miles of their railway from St. Leonard northerly towards a junction with the Intercolonial Railway at Chaudière Junction, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000

<b>340.</b> For a railway from Lime Ridge, in the county of Wolfe, in the province of Quebec, northerly through the county of Wolfe and into the county of Megantic, a distance not exceeding 50 miles from Lime Ridge, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 160,000
<b>341.</b> To the Strathroy and Western Counties Railway Company, for 25 miles of their railway from St. Thomas through the counties of Elgin and Middlesex, towards Forest Station or Park Hill, on the Grand Trunk Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	80,000
<b>342.</b> To the Parry Sound Colonization Railway Company, for 20 miles of their railway east from Parry Sound, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000
<b>343.</b> To the Manitoulin and North Shore Railway Company, for 10 miles of their railway from Little Current to Nelson, on the Algoma Branch of the Canadian Pacific Railway, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	32,000
<b>344.</b> To the United Counties Railway Company for 32 miles of their railway from Iberville to Sorel, in addition to the 32 miles already subsidized, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	102,400
<b>345.</b> To the Joliette and St. Jean de Matha Railway Company, for 12 miles of their railway from St. Jean de Matha to Ste. Emelie de L'Energie, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	38,400
<b>346.</b> To the Great Northern Railway Company, for 22 miles of their railway, from the eastern end of the 15 miles subsidized by chapter 2 of 1893 to a point between Joliette and St. Félix de Valois, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	70,400
<b>347.</b> To the Quebec and Lake St. John Railway Company, for 2 miles of the Chicoutimi branch of their railway, from the east end of the 50 miles already subsidized and built eastward to deep water at Chicoutimi, a subsidy not exceeding \$3,200 per mile; also for 12 miles from the 52nd mile on the Chicoutimi branch to Ha Ha Bay, a subsidy not exceeding \$3,200 per mile; the whole not exceeding.....	44,800
<b>348.</b> To the Pontiac and Ottawa Railway Company, for 23 miles of their railway from the point of divergence from the Pontiac Railway to Ferguson's Point, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	73,600
<b>349.</b> To the Ottawa and Gatineau Valley Railway Company, for 20 miles of their railway from the eastern end of the 62 miles already subsidized towards Désert, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000
<b>350.</b> To the Canada Eastern Railway Company for 6 miles of their railway from the town of Chatham to Black Brook, a subsidy not exceeding \$3,200 per mile; also for 4 miles of their railway for a branch to the village of Nelson, a subsidy not exceeding \$3,200 per mile; the whole not exceeding.....	32,000
<b>351.</b> For a railway from Cross Creek Station, on the Canada Eastern Railway to Stanley village, in the county of York, in the province of New Brunswick, 6 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	19,200
<b>352.</b> To the Restigouche and Victoria Railway Company, for 20 miles of their railway from the western end of the 15 miles subsidized by chapter 5 of 1892, towards Grand Falls, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	64,000



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<b>353.</b>	To the Central Railway Company of New Brunswick, for 15 miles of their railway from Chipman station to the Newcastle coal fields, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	\$ 48,000
<b>354.</b>	To the Tobique Valley Railway Company, for 15 miles of their railway from the present terminus at Plaister Rock easterly, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	48,000
<b>355.</b>	Towards the restoration or renewal of the railway bridge on the South-eastern Railway over the Yamaska River at Yamaska, a subsidy equal to one-third of the actual cost of the renewal of the bridge, but the grant not to exceed in the whole.....	50,000
<b>356.</b>	To the Boston and Nova Scotia Coal and Railway Company, for 10½ miles of their railway from the north end of the section already subsidized to Broad Cove, a subsidy not exceeding \$3,200 per mile; also for 25 miles of their railway from a point on the Cape Breton Railway at or near Orangedale towards Broad Cove, in lieu of the subsidy granted by chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile; the whole not exceeding	113,600
<b>357.</b>	For a railway from Port Hawkesbury towards Cheticamp, 25 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	80,000
<b>358.</b>	To the Manitoba North-western Railway Company, for 100 miles of the extension of their main line from its present western terminus towards Prince Albert,—the company relinquishing 3,200 acres of the land grant per mile, and the whole road to be operated as a continuous line of railway under one management, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	320,000
<b>359.</b>	For a line of railway from the junction of the Elk and Kootenay Rivers to Coal Creek, a distance of 34 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	108,800
<b>360.</b>	For a railway from Abbotsford Station on the Mission Branch of the Canadian Pacific Railway to the town of Chilliwack, 21 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	67,200
<b>361.</b>	To the Nicola Valley Railway Company, for 28 miles of their railway from the western end of the section of their road subsidized by chapter 5, of 1892, towards Nicola Lake, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	89,600
<b>362.</b>	To the Nakusp and Slocan Railway Company, for 38 miles of their railway from the town of Nakusp to a point at or near the Forks of Carpenter Creek, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	121,600
<b>363.</b>	To the Pontiac and Kingston Railway Company, for 22 miles of a railway from Portage du Fort to Upper Thorne Centre, via Shawville, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	70,400
<b>364.</b>	To the New Glasgow Iron, Coal and Railway Company, for 5 miles of their railway, from Sunnybrae to Kerrogare, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole....	16,000 00
<b>365.</b>	To the South Shore Railway Company, for 35 miles of their railway from Yarmouth towards Shelburne and Lockport, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	112,000 00
<b>366.</b>	To the Cape Breton Railway Extension Company, for 30 miles of railway from Port Hawkesbury to St. Peter's, on their line of railway from Port Hawkesbury to Louisbourg, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000 00



<b>367.</b> For a railway from a point on the Intercolonial Railway between Norton and Sussex Stations towards Havelock, 20 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.	\$ 64,000 00
<b>368.</b> For a railway from St. John to Barneville, for a distance of 10 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	32,000 00
<b>369.</b> For a line of railway from Cap de la Magdeleine to connect with the Piles Branch of the Canadian Pacific Railway, 3 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole .....	9,600 00
<b>370.</b> To the Canada Eastern Railway Company, for an extension of one mile from the western end of their railway, to connect with the Canadian Pacific Railway, a subsidy not exceeding.....	3,200 00
<b>371.</b> To the Great Northern Railway Company, for 30 miles of their railway from its junction with the Lower Laurentian Railway near St. Tite, in the vicinity of the River St. Maurice, westward, in lieu of the subsidy granted to the Maskinongé and Nipissing Railway Company by chapter 2 of 1893, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	96,000 00
<b>372.</b> To the Lindsay, Bobcaygeon and Pontypool Railway Company, for 16 miles of their railway from Bobcaygeon to the Midland Railway, and for another 16 miles from the end of the first mentioned 16 miles to Pontypool, in lieu of the subsidies granted by chapter 2 of 1890, and chapter 5 of 1892, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	102,400 00
<b>373.</b> To the Montfort Colonization Railway Company, for 12 miles of their railway from the end of the 21 miles already subsidized westward to a point on the Rouge River, in the county of Argenteuil, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	38,400 00
<b>374.</b> For a railway from a point on the Caraquet Railway, at or near Pokemouche siding, towards Tracadie village, 12 miles, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	38,400 00

The subsidies hereinbefore mentioned as to be granted to companies named for that purpose shall, if granted by the Governor in Council, be granted to such companies respectively; the other subsidies may be granted to such companies as shall be approved by the Governor in Council as having established to his satisfaction their ability to construct and complete the said railways respectively; all the lines for the construction of which subsidies are granted, unless they are already commenced, shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years, to be fixed by Order in Council, and shall also be constructed according to descriptions and specifications and upon conditions to be approved by the Governor in Council, on the report of the Minister of Railway and Canals, and specified in an agreement to be made in each case by the company with the Government, which agreement the Government is hereby empowered to make; the location also of every such line of railway shall be subject to the approval of the Governor in Council.

The granting of such subsidies respectively shall be subject to such conditions for securing such running powers or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council determines.

The said subsidies respectively shall be payable out of the Consolidated Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon the completion of the work subsidized,—except as to subsidies with respect to which it is hereinbefore otherwise provided, and except also as to the



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subsidy granted to the Great Northern Railway Company by chapter two of 1893, for fifteen miles from Montcalm to the Canadian Pacific Railway, which shall be paid as follows: on the completion of the eighteen miles from New Glasgow to Montcalm and of two miles out of the fifteen miles from Montcalm to the Canadian Pacific Railway, an instalment proportionate to the value of the ten miles out of the total mileage subsidized by chapter two of 1893, to be established as aforesaid, and the balance of the said subsidy on the completion of the remaining thirteen miles of the said railway.

No subsidies were authorized by 58-59 Vict. (1895), nor by 59 Vict. (1896).

By the Act 60-61, chapter 4, 1897 (*Assented to 29th June, 1897*).

**1.** In this Act, unless the context otherwise requires, the expression "cost" means the actual, necessary and reasonable cost, and includes the amount expended upon any bridge up to and not exceeding twenty-five thousand dollars, forming part of the line of railway subsidized not otherwise receiving any bonus, but shall not include the cost of equipping the railway, nor the cost of terminals and right of way of the railway in any city or incorporated town; and such actual, necessary and reasonable cost shall be determined by the Governor in Council, upon the recommendation of the Minister of Railways and Canals and upon the report of the Chief Engineer of Government Railways, certifying that he has made or caused to be made an inspection of the line of railway for which payment of subsidy is asked, and careful inquiry into the cost thereof, and that in his opinion the amount upon which the subsidy is claimed is reasonable, and does not exceed the true, actual and proper cost of the construction of such railway.

**2.** The Governor in Council may grant a subsidy of \$3,200 per mile towards the construction of each of the undermentioned lines of railway (not exceeding in any case the number of miles hereinafter respectively stated), which shall not cost more on the average than \$15,000 per mile for the mileage subsidized, and towards the construction of each of the said lines of railway not exceeding the mileage hereinafter stated, which shall cost more on the average than \$15,000 per mile for the mileage subsidized, a further subsidy beyond the sum of \$3,200 per mile of fifty per cent on so much of the average cost of the mileage subsidized as is in excess of \$15,000 per mile, such subsidy not exceeding in the whole the sum of \$6,400 per mile:—

- 375.** To the Ottawa and New York Railway Company, for  $53\frac{87}{100}$  miles of their railway from Cornwall to Ottawa, in lieu of the subsidy granted by chapter 5 of the statutes of 1892;
- 376.** To the Kingston, Smith's Falls and Ottawa Railway Company, for 101 miles of their railway from Kingston, or a junction with the Grand Trunk Railway at Rideau or some other point near Kingston, to Ottawa, in lieu of the subsidy granted by chapter 5 of 1892;
- 377.** For a railway from a point on the Canadian Pacific Railway, at or near either Welsford or Westfield, or between the said two points, to Gagetown, in the county of Queen's, New Brunswick, not exceeding 30 miles, in lieu of the subsidy granted by chapter 2 of 1890;
- 378.** To the Cobourg, Northumberland and Pacific Railway Company, for 50 miles of their railway from Cobourg to the Ontario and Quebec Railway, in lieu of the subsidies granted by chapter 5 of 1892;
- 379.** To the Ottawa and Gatineau Railway Company, for 20 miles of their railway from the end of the 62nd mile subsidized towards Désert, in lieu of the subsidies granted by chapter 4 of 1894;
- 380.** To the Great Northern Railway Company, for 9 miles of their railway, being shortage in distance between Montcalm and St. Tite;
- 381.** To the St. Gabriel de Brandon and Ste. Emélie de l'Energie Railway Company, for 15 miles of their railway from St. Gabriel to Ste. Emélie de l'Energie, and 5 miles from a point on the main line to St. Jean de Matha, making in all 20 miles, in lieu of the subsidy granted by chapter 4 of 1894;
- 382.** To the Central Railway Company of New Brunswick, for 15 miles of their railway from Chipman Station to Newcastle Coal Fields, county of Queen's, in lieu of the subsidy granted by chapter 4 of 1894;

- 383.** To the Gulf Shore Railway Company, for  $5\frac{1}{2}$  miles of their railway from the end of the section subsidized to Tracadie and thence to Big Tracadie, New Brunswick ;
- 384.** For a railway from Campbellton, on the Intercolonial Railway, towards Grand Falls, New Brunswick, a distance of 20 miles, commencing at Campbellton, in lieu of the subsidy granted by chapter 4 of 1894 ;
- 385.** To the Pontiac Pacific Junction Railway Company, for  $7\frac{1}{2}$  miles of their railway from Hull to Aylmer, in lieu of the subsidy granted by chapter 2 of 1890 ;
- 386.** To the Schomberg and Aurora Railway Company, for 15 miles of their railway from a point on the Grand Trunk Railway between King and Newmarket to Schomberg, in the province of Ontario ;
- 387.** To the Tilsonburg, Lake Erie and Pacific Railway Company, for  $3\frac{5}{10}$  miles of their railway from the present terminus, through Tilsonburg to the Michigan Central Railway, in the province of Ontario.
- 388.** To the Ottawa, Arnprior and Parry Sound Railway Company, for 52 miles of their railway, from the crossing of the Northern Pacific Junction Railway to 55 miles west of Barry's Bay, and also for 4 miles of their railway across Parry Island ;
- 389.** To the Pembroke Southern Railway Company, for 20 miles of their railway from Pembroke to Golden Lake, in the province of Ontario ;
- 390.** To the Ontario and Rainy River Railway Company, for 80 miles of their railway from the Port Arthur, Duluth and Western Railway to Rainy Lake, in the province of Ontario ;
- 391.** To the Strathroy and Western Counties Railway Company, for 7 miles of their railway, commencing at a point at or near Caradoc Station on the Canadian Pacific Railway and extending to the town of Strathroy ;
- 392.** To the Phillipsburg Railway and Quarry Company, for  $\frac{6}{10}$  mile of their railway from the end of the subsidized section to the government wharf at Phillipsburg ;
- 393.** To the United Counties Railway Company, for 1 mile of their railway from Johnson to St. Grégoire Station, in the province of Quebec ;
- 394.** To the St. Lawrence and Adirondack Railway Company, for  $13\frac{1}{2}$  miles of their railway from Beauharnois to Caughnawaga, in the province of Quebec ;
- 395.** To the East Richelieu Valley Railway Company, for 24 miles of their railway from Iberville to St. Thomas, boundary of Missisquoi County, in the province of Quebec ;
- 396.** To the Portage du Fort and Bristol Branch Railway Company, for 15 miles of their railway to a point at or near Shawville, in the county of Pontiac ;
- 397.** For a railway from a point at or near Windsor Junction, on the Intercolonial Railway, to Upper Musquodoboit, for a distance of 40 miles ;
- 398.** To the St. Stephens and Milltown Railway Company, for  $1\frac{4}{10}$  mile of their railway from Milltown to St. Stephen, in the province of New Brunswick ;
- 399.** For a railway from Sunny Brae to Country Harbour, and from a point at or near Country Harbour Cross Roads to Guysboro', in the province of Nova Scotia, a distance of 65 miles ;
- 400.** For a railway from Port Hawkesbury, Nova Scotia, to Port Hood and Broad Cove, 53 miles, in lieu of the subsidy granted by chapter 4 of 1894 ;
- 401.** For a railway from a point on the Central Railway in the county of Lunenburg, Nova Scotia, to the town of Liverpool, via the village of Caledonia, or to the village of Caledonia via Liverpool, or for any part thereof, the whole distance not exceeding 62 miles ;
- 402.** For a railway from Indian Garden on the line of the Central Railway, to Shelburne, in the province of Nova Scotia, a distance of 35 miles ;
- 403.** To the Coast Railway Company of Nova Scotia, for 61 miles of their railway from Yarmouth to Port Clyde, in the province of Nova Scotia ;
- 404.** For a railway from Brookfield Station on the Intercolonial Railway to Eastville, 30 miles ;



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- 405.** To the Great Northern Railway Company, for 35 miles of their railway from St. Jérôme, in the province of Quebec, to Hawkesbury, in the province of Ontario ;
- 406.** To the Drummond County Railway Company, for 42½ miles of their railway from Moose Park to Chaudière River, provided that the amount of the said subsidy shall be refunded to the Government of Canada in the event of the company's railway from Ste. Rosalie to Chaudière River being purchased or leased for a term of years by the government.

**3.** The Governor in Council may grant the subsidies hereinafter mentioned to the railway companies and towards the construction of the railways also hereinafter mentioned, that is to say :—

- |   |            |
|---|------------|
| <b>407.</b> To the Great Northern Railway Company, for 67 miles of their railway between Montcalm and its junction with the Lower Laurentian Railway near St. Tite, in the vicinity of the St. Maurice River, the balance remaining unpaid of the subsidies granted by chapter 2 of 1893, and by chapter 4 of 1894, between these points, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....\$ | 182,400 00 |
| <b>408.</b> To the Pontiac Pacific Junction Railway Company, for 85 miles of their railway from Aylmer to Pembroke, also for bridging the Ottawa River, the balance remaining unpaid of the subsidy granted by chapter 8 of 1884, and by chapter 4 of 1894, not exceeding.....  | 114,272 00 |
| <b>409.</b> To the Ottawa and Gatineau Railway Company, for 62 miles of their railway from Hull towards Désert, in the province of Quebec, the balance remaining unpaid of the subsidy granted by chapter 2 of 1893, not exceeding in the whole.....  | 35,872 00  |
| <b>410.</b> To the Grand Trunk Railway Company of Canada, for a subsidy towards the rebuilding and enlargement of the Victoria Bridge at Montreal over the St. Lawrence River, 15 per cent upon the amount expended thereon, not exceeding.....   | 300,000 00 |
| <b>411.</b> To the Montfort Colonization Railway Company, for 33 miles of their railway from Montfort Junction to Arundel, in the province of Quebec, a subsidy not exceeding \$2,000 per mile, nor exceeding in the whole.....   | 66,000 00  |
| <b>412.</b> To the Irondale, Bancroft and Ottawa Railway Company, the balance remaining unpaid of the subsidy for the last five miles of the company's railway ; the eastern terminus to be either at the village of Bancroft or at some point near the Hastings Road, in the township of Herschell, in lieu of the subsidy granted by chapter 2 of 1893, not exceeding in the whole.....                             | 16,000 00  |
| <b>413.</b> To the Great Northern Railway Company, towards the construction of a railway bridge over the Ottawa River at Hawkesbury, 15 per cent upon the amount expended thereon, not exceeding.....   | 52,500 00  |
| <b>414.</b> For a railway and traffic bridge over the Ottawa River at Nepean Point, between the city of Ottawa and the city of Hull, 15 per cent upon the amount expended thereon, not exceeding.....   | 112,500 00 |

**4.** The subsidies hereinbefore mentioned as to be granted to companies named for that purpose shall, if granted by the Governor in Council, be granted to such companies respectively ; the other subsidies may be granted to such companies as are approved by the Governor in Council as having established to his satisfaction their ability to construct and complete the said railways respectively ; all the lines for the construction of which subsidies are granted, unless they are already commenced, shall be commenced within two years from the first day of August next, and completed within a reasonable time, not to exceed four years from the said first day of August, to be fixed by Order in Council, and shall also be constructed according to descriptions and specifications and

upon conditions to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made in each case by the company with the Government, which agreement the Government is hereby empowered to make; the location also of every such line of railway shall be subject to the approval of the Governor in Council.

5. The granting of such subsidies respectively shall be subject to such conditions for securing such running powers or traffic arrangements and other rights as will afford all reasonable facilities and equal mileage rates to all railways connecting with those so subsidized, as the Governor in Council determines.

6. The said subsidies respectively shall be payable out of the Consolidated Revenue Fund of Canada, by instalments, on the completion of each section of the railway of not less than ten miles, proportionate to the value of the portion so completed in comparison with that of the whole work undertaken, to be established by the report of the said Minister, or upon the completion of the work subsidized—except as to subsidies with respect of which it is hereinbefore otherwise provided.

7. Any company receiving a subsidy as aforesaid, in excess of \$3,200 per mile, shall be bound to carry Her Majesty's mails for a term of ten years free of charge over the portion of railway subsidized.

By the Special Act 60-61 Victoria, Chapter 5, 1897. (*Assented to 29th June, 1897.*)

1. Subject to the conditions hereinafter mentioned, the Governor in Council may grant to the Canadian Pacific Railway Company a subsidy towards the construction of a railway from Lethbridge, in the district of Alberta, through the Crow's Nest Pass to Nelson, in the province of British Columbia (which railway is hereinafter called "the Crow's Nest Line,") to the extent of eleven thousand dollars per mile thereof, and not exceeding in the whole the sum of three million six hundred and thirty thousand dollars, payable by instalments on the completion of each of the several sections of the said railway of the length respectively of not less than ten miles, and the remainder on the completion of the whole of the said railway; provided that an agreement between the Government and the company is first entered into in such form as the Governor in Council thinks fit, containing covenants to the following effect, that is to say:—

On the part of the company:

(a.) That the company will construct or cause to be constructed, the said railway upon such route and according to such descriptions and specifications and within such time or times as are provided for in the said agreement, and, when completed, will operate the said railway for ever;

(b.) That the said line of railway shall be constructed through the town of Macleod, and a station shall be established therein, unless the Governor in Council is satisfied by the company that there is good cause for constructing the railway outside the limits of the said town, in which case the said line of railway shall be located and a station established at a distance not greater than five hundred yards from the limits of the said town;

(c.) That so soon as the said railway is opened for traffic to Kootenay Lake, the local rates and tolls on the railway and on any other railway used in connection therewith and now or hereafter owned or leased by or operated on account of the company south of the company's main line in British Columbia, as well as the rates and tolls between any point on any such line or lines of railway and any point on the main line of the company throughout Canada, or any other railway owned or leased by or operated on account of the company, including its lines of steamers in British Columbia, shall be first approved by the Governor in Council or by a railway commission, if and when such commission is established by law, and shall at all times thereafter and from time to time be subject to revision and control in the manner aforesaid;

(d.) That a reduction shall be made in the general rates and tolls of the company as now charged, or as contained in its present freight tariff, whichever rates are now the lowest, for carloads or otherwise, upon the classes of merchandise hereinafter mentioned, westbound, from and including Fort William and all points east of Fort



## Department of Railways and Canals.

William on the company's railway to all points west of Fort William on the company's main line, or on any line of railway throughout Canada owned or leased by or operated on account of the company, whether the shipment is by all rail line or by lake and rail, such reduction to be to the extent of the following percentages respectively, namely :—

Upon all green and fresh fruits,  $33\frac{1}{3}$  per cent ;

Coal oil, 20 per cent ;

Cordage and binder twine, 10 per cent ;

Agricultural implements of all kinds, set up or in parts, 10 per cent ;

Iron, including bar, band, Canada plates, galvanized, sheet, pipe, pipe-fittings, nails, spikes and horse shoes, 10 per cent ;

All kinds of wire, 10 per cent ;

Window glass, 10 per cent ;

Paper for building and roofing purposes, 10 per cent ;

Roofing felt, box and packing, 10 per cent ;

Paints of all kinds and oils, 10 per cent ;

Live stock, 10 per cent ;

Wooden ware, 10 per cent ;

Household furniture, 10 per cent ;

And that no higher rates than such reduced rates or tolls shall be hereafter charged by the company upon any such merchandise carried by the company between the points aforesaid ; such reductions to take effect on or before the first of January, one thousand eight hundred and ninety-eight ;

(e.) That there shall be a reduction in the company's present rates and tolls on grain and flour from all points on its main line, branches or connections, west of Fort William to Fort William and Port Arthur and all points east, of three cents per one hundred pounds, to take effect in the following manner :—One and one-half cent per one hundred pounds on or before the first day of September, one thousand eight hundred and ninety-eight, and an additional one and one-half cent per one hundred pounds on or before the first day of September, one thousand eight hundred and ninety-nine ; and that no higher rates than such reduced rates or tolls shall be charged after the dates mentioned on such merchandise from the points aforesaid ;

(f.) That the Railway Committee of the Privy Council may grant running powers over the said line of railway and all its branches and connections, or any portions thereof, and all lines of railway now or hereafter owned or leased by or operated on account of the company in British Columbia south of the company's main line of railway, and the necessary use of its tracks, stations and station grounds, to any other railway company applying for such grant upon such terms as such committee may fix and determine, and according to the provisions of The Railway Act and of such other general Acts relating to railways as are from time to time passed by Parliament ; but nothing herein shall be held to imply that such running powers might not be so granted without the special provision herein contained ;

(g.) That the said railway, when constructed, together with that portion of the company's railway from Dunmore to Lethbridge, and all lines of railway, branches, connections and extensions in British Columbia south of the main line of the company in British Columbia shall be subject to the provisions of The Railway Act and of such other general Acts relating to railways as are from time to time passed by Parliament ;

(h.) That if the company or any other company with whom it shall have any arrangement on the subject shall, by constructing the said railway or any part of it, as stipulated for in the said agreement, become entitled to and shall get any land as a subsidy from the Government of British Columbia, then such lands, excepting therefrom those which in the opinion of the Director of the Geological Survey of Canada (expressed in writing) are coal-bearing lands, shall be disposed of by the company or by such other company to the public according to regulations and at prices not exceeding these prescribed from time to time by the Governor in Council, having regard to the then existing provincial regulations applicable thereto ; the expression "lands" including all mineral and timber thereon which shall be disposed of as aforesaid, either with or without the land, as the Governor in Council may direct :



(i.) That if the company or any other company with whom it shall have any arrangement on the subject shall, by constructing the said railway or any part of it as stipulated for in the said agreement, become entitled to and shall get any lands as a subsidy from the Government of British Columbia which in the opinion of the Director of the Geological Survey of Canada (expressed in writing) are coal-bearing lands, then the company will cause to be conveyed to the Crown, in the interest of Canada, a portion thereof to the extent of fifty thousand acres, the same to be of equal value per acre as coal lands with the residue of such lands. The said fifty thousand acres to be selected by the Government in such fair and equitable manner as may be determined by the Governor in Council, and to be thereafter held or disposed of or otherwise dealt with by the Government as it may think fit on such conditions, if any, as may be prescribed by the Governor in Council, for the purpose of securing a sufficient and suitable supply of coal to the public at reasonable prices, not exceeding two dollars per ton of two thousand pounds free on board cars at the mines.

And on the part of the Government, to pay the said subsidy by instalments as aforesaid.

2. The company shall be bound to carry out in all respects the said agreement, and may do whatever is necessary for that purpose.

3. In order to facilitate such financial arrangements as will enable the company to complete the railway as aforesaid without delay and to acquire and consolidate with it the railway from Dunmore to Lethbridge, hereinafter called "the Alberta Branch," which, under the authority of chapter thirty-eight of the statutes of 1893, it now operates as lessee, and is under covenant to purchase, the company may issue bonds which will be a first lien and charge and be secured exclusively upon the said Alberta Branch and Crow's Nest Line together in the same way and with the same effect as if both the said pieces of railway to be so consolidated were being built by the company as one branch of its railway within the meaning of section one of chapter fifty-one of the statutes of 1888, and that section shall apply accordingly, such first lien to be subject to the payment of the purchase money of the Alberta Branch, as provided for in the said covenant to purchase.

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### LAND SUBSIDIES,

By 47 Vic., chap. 25, clause 7, 1884 (*Assented to 19th April, 1884*):—

1. The Governor in Council is hereby authorized in aid of the construction of a railway from some point on the Canadian Pacific Railway to Hudson's Bay, to make a free grant of not more than six thousand four hundred acres for each mile of railway within Manitoba, and not more than twelve thousand eight hundred acres for each mile in the North-west Territories.

By 48-49 Vic., chap. 60, 1885 (*Assented to 20th July, 1885*):—

2. To the North-western Coal and Navigation Company (Limited), Dominion lands to an extent not exceeding three thousand eight hundred acres for each mile of the company's railway from Medicine Hat to the coal banks on the Belly River, about one hundred and ten miles.
3. To the Manitoba and South-western Colonization Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres for each mile of the company's railway from its commencement at Winnipeg to its terminus at Whitewater Lake, about one hundred and fifty miles.
4. To the Manitoba and North-western Railway Company, Dominion lands to the extent of six thousand four hundred acres for each mile of the company's railway for the whole distance from Portage la Prairie to the crossing of the South Branch of the River Saskatchewan, twenty miles from Prince Albert, about four hundred and thirty miles.
5. To the Qu'Appelle, Long Lake and Saskatchewan Railroad and Steamboat Company, Dominion lands to an extent not exceeding six thousand four hundred acres for each mile of the company's railway, from its commencement near Regina to the navigable waters of Long Lake.

The said grants, and each of them, may be so made in aid of the construction of the said railways respectively, in the proportion and upon the conditions fixed by the Orders in Council made in respect thereof,—each of the said enterprises being respectively subject to any modification thereof which may hereafter be made by the Governor in Council; and except as to such conditions, the said grants shall be free grants, subject only to the payment by the grantees respectively of the cost of survey of the lands and incidental expenses, at the rate of ten cents per acre in cash on the issue of the patents therefor.

By 49 Vic., cap. 11, 1886 (*Assented to 2nd June, 1886*):—

6. To the Manitoba and North-western Railway Company, Dominion lands to the extent of six thousand four hundred acres per mile for each mile of the company's branch railway running from a point on the main line of that railway, at or near Todburn, in a north-westerly direction through the county of Russell to the Assiniboine River, near the town of Shellmouth, about twenty-six miles.
- \*7. To the North-west Central Railway Company, or to such other company as may undertake the construction of the railway, or a railway from a point on the Manitoba and North-western Railway via Rapid City, westward, Dominion lands to the extent of six thousand four hundred acres for each mile of the company's railway, for the whole distance from Brandon station on the Canadian Pacific Railway, or from such point on the Manitoba and North-western Railway as aforesaid, to Battleford, in the provisional district of Saskatchewan, about four hundred and fifty miles.

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\* Lapsed except for the subsidy earned for the 50 miles constructed.



- \*8. To the Wood Mountain and Qu'Appelle Railway Company, Dominion lands to the extent of six thousand four hundred acres for each mile of the company's railway for the whole distance commencing at a point in township number four, in range number thirty, west of the second meridian, in the Dominion lands system of survey, passing through the town of Fort Qu'Appelle, to join the Manitoba and North-western Railway at a point to be fixed for that purpose by the Governor in Council, about two hundred and forty miles.

The said grants, and each of them, may be so made in aid of the construction of the said railways respectively, in the proportions and upon the conditions fixed by the Orders in Council made in respect thereof,—each of the said enterprises being respectively subject to any modification thereof which may hereafter be made by the Governor in Council; and, except as to such conditions, the said grants shall be free grants, subject only to the payment by the grantees respectively of the cost of survey of the lands and incidental expenses, at the rate of ten cents per acre in cash on the issue of the patents therefor.

By section 5 of this Act authority was given for the incorporation by the Governor in Council of a company to construct the line from Brandon, or other point indicated, to Battleford, subsidized by this Act.

By 50-51 Vic., cap. 22, 1887 (*Assented to 23rd June, 1887*):—

9. The subsidy to the North-western Coal and Navigation Company, granted by 49 Vic., chap. 60, was increased from 3,800 acres per mile to 3,840 acres per mile.

By 50-51 Vic., cap. 23, 1887 (*Assented to 23rd June, 1887*):—

- \*10. To the Alberta and Athabasca Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres for each mile of the company's railway from some point on the Bow River or Canadian Pacific Railway, at or between Calgary and Crowfoot Creek, to a point near the town plot of Edmonton, about three hundred miles.

11. To the Qu'Appelle, Long Lake and Saskatchewan Railway and Steamboat Company, Dominion lands to an extent not exceeding six thousand four hundred acres for each mile of the company's railway, from a point near the northern terminus of the completed portion of that railway, at or near Long Laketon, on the navigable waters of Long Lake, to a point at or near where the fifty-second parallel of latitude crosses the South Saskatchewan River, thence to a point at or near the elbow of the North Saskatchewan River, with branches to Prince Albert and Battleford, about three hundred and twenty-five miles.

- \*12. To the Medicine Hat Railway and Coal Company, Dominion lands to an extent not exceeding six thousand four hundred acres for each mile of the company's railway, from a point at or near Medicine Hat, on the line of the Canadian Pacific Railway, to the coal field in or near townships twelve and thirteen, range six, west of the fourth principal meridian, a distance of about eight miles, to be selected out of such lands as are at the disposal of the Government in the proximity of the line of the company's railway.

The said grants, and each of them, may be so made in aid of the construction of the said railways respectively, in the proportions and upon the conditions fixed by the Orders in Council made in respect thereof, each of the said enterprises being respectively subject to any modification thereof which may hereafter be made by the Governor in Council; and, except as to such conditions, the said grants shall be free grants, subject only to the payment by the grantees respectively of the cost of survey of the lands and incidental expenses, at the rate of ten cents per acre in cash on the issue of the patents therefor.

By 52 Vic., chap. 4, 1889 (*Assented to 2nd May, 1889*):—

13. To the North-western Coal and Navigation Company (Limited), in addition to the grant provided for by section one of the Act passed in the session held in the

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\*The subsidies in land grants for the Wood Mountain and Qu'Appelle, the Alberta and Athabasca and the Medicine Hat railways have lapsed.



## Department of Railways and Canals.

forty-eighth and forth-ninth years of Her Majesty's reign and chaptered sixty, Dominion lands to an extent not exceeding two thousand six hundred acres for each mile of the company's railway from Dunmore station, on the Canadian Pacific Railway, to Lethbridge, on the Belly River, the present terminus of the said railway, a distance of one hundred and nine and one-half miles,—such additional grant to be made only on condition that the gauge of the said railway be made standard width ; and also to the said North-western Coal and Navigation Company (Limited), Dominion lands to an extent not exceeding six thousand four hundred acres for each mile of the company's railway from Lethbridge to the international boundary, a distance of about fifty miles.

**14.** To the Red Deer Valley Railway and Coal Company, Dominion lands to an extent not exceeding six thousand four hundred acres for each mile of the company's railway from Cheadle Station, on the Canadian Pacific Railway, to its terminus at a point in or near township twenty-nine, range twenty-three, west of the fourth meridian, a distance of about fifty-five miles.

\* **15.** To the North-western Railway Company of Canada, Dominion lands to an extent not exceeding ten thousand acres for each mile of the company's railway from Calgary, on the Canadian Pacific Railway, northerly to a point on the North Saskatchewan River, at or near Edmonton, a distance of about two hundred and ten miles ; and also to the said North-western Railway Company of Canada, Dominion lands to an extent not exceeding ten thousand acres for each mile of the company's railway from Calgary southerly to Lethbridge, a distance of about one hundred and twenty miles.

**16.** To the Lake Manitoba Railway and Canal Company, Dominion lands to an extent not exceeding six thousand acres for each mile of the company's railway from Portage la Prairie to the southern boundary of Lake Manitoba, a distance of about seventeen miles.

The said grants, and each of them, may be so made in aid of the construction of the said railways respectively, in the proportions and upon the conditions fixed by the Orders in Council made in respect thereof ; and, except as to such conditions, the said grants shall be free grants, subject only to the payment by the grantees respectively of the cost of survey of the lands and incidental expenses, at the rate of ten cents per acre in cash on the issue of the patents therefor.

The Governor in Council may make the grant of land provided for by section three of the Act forty-ninth Victoria, chapter eleven, being for the line of the Wood Mountain and Qu'Appelle Railway, of about two hundred and forty miles in length, applicable to the line of railway of the said company, as authorized by the Act respecting the Wood Mountain and Qu'Appelle Railway Company, passed during the present session of Parliament, upon the like terms and subject to the like conditions as those upon which the grant hereinbefore mentioned was authorized to be made to the said company by the Act in this section first cited.

By the Act 53 Vic., cap. 4, 1890 (*Assented to 16th May, 1890*):—

**17.** To the Canadian Pacific Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a branch line to be constructed from Glenboro' westerly a distance of about sixty miles to a point on the proposed branch railway of the said company running from Brandon south-westerly.

**18.** To the Canadian Pacific Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a branch line of railway from a point at or near Brandon, on the main line of the Canadian Pacific Railway, south-westerly to or near township three, range twenty-seven, west of the first principal meridian, and thence westerly, a total distance of one hundred miles ; and also a similar grant, at the same rate per mile, for the

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\* The North-western Railway of Canada land grant subsidy has lapsed.

said company's proposed branch railway from a point on the line just described at or near township three, range twenty-seven, west of the first principal meridian, easterly to Deloraine, a distance of about twenty-five miles, making the total length of railway to which this grant is applicable one hundred and twenty-five miles.

- \*19.** To the Brandon and South-western Railway Company, Dominion lands to an extent not less than six thousand four hundred acres per mile for the line of railway from a point in township one, in either range twenty-three or twenty-four west of the first principal meridian, to Deloraine, a distance of about seventeen miles.
- \*20.** To the Lac Seul Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a line of railway from a point at or near Shelly Station, on the main line of the Canadian Pacific Railway, to a point at or near White Mud Lake, on the Winnipeg River, a distance of about eighteen miles
- 21.** To the Calgary and Edmonton Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres for each mile of the company's railway from Calgary to a point at or near Edmonton on the North Saskatchewan River, a distance of about one hundred and ninety miles ; and also a grant of six thousand four hundred acres for each mile of the company's railway from Calgary to a point on the international boundary between Canada and the United States, a distance of about one hundred and fifty miles.
- \*22.** To the North-western Coal and Navigation Company (Limited), Dominion lands to an extent not exceeding three thousand eight hundred and forty acres for each mile of the company's railway from Lethbridge to the Crow's Nest Pass, a distance of about one hundred miles.
- 23.** To the Lake Manitoba Railway and Canal Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a line of railway from Portage la Prairie to Lake Winnipegosis, at or near Meadow Portage, a distance of about one hundred and twenty-five miles.
- 24.** To the Manitoba and South-eastern Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a line of railway from Winnipeg southerly or south-easterly to a point on the west side of the Lake of the Woods, a distance of about one hundred and ten miles.

The said grants, and each of them, may be made in aid of the construction of the said railways respectively, in the proportion and upon the conditions fixed by the Orders in Council made in respect thereof, and except as to such conditions, the said grants shall be free grants, subject only to the payment by the grantees respectively of the cost of survey of the lands and incidental expenses, at the rate of ten cents per acre in cash on the issue of the patents therefor.

The lands by this Act authorized to be granted to the Canadian Pacific Railway Company shall be taken and held, and may be disposed of, free and clear of any encumbrance on the lands or property of the said company created before the passing of this Act.

By the special Act 53 Vic., chap. 3, 1890 (*Assented to 26th March, 1890*):—

- 25.** The Act 52 Victoria, chapter 4, authorizing, in error, the grant of land to the North-western Coal and Navigation Company, for fifty miles from Lethbridge to the international boundary, was amended—the said grant being made to the Alberta Railway and Coal Company.

By 54-55 Vic., chap. 9, 1891 (*Assented to 30th September, 1891*):—

- 26.** In lieu of the subsidy in land authorized by the Act 52 Victoria, chapter 4, to be granted to the Red Deer Valley Railway and Coal Company, and subject to the conditions in the said Act mentioned, the Governor in Council may gran.

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\* The land grant subsidy to the Brandon and South-western, the Lac Seul, and North-western Coal and Navigation railways has lapsed.



## Department of Railways and Canals.

Dominion lands to the said company to an extent not exceeding six thousand four hundred acres for each mile of the said company's railway from the town of Calgary, in the district of Alberta, in the North-west Territories, to a point in or near township twenty-nine, range twenty-three, west of the fourth meridian, a distance of about fifty-five miles.

By 54-55 Vic., cap. 10, 1891 (*Assented to 30th September, 1891*):—

- 27.** To the Manitoba South-western Colonization Railway Company, in addition to the subsidy for one hundred and fifty miles of railway authorized by the Act passed in the session held in the forty-eighth and forty-ninth years of Her Majesty's reign, chapter sixty, Dominion lands to the extent of six thousand four hundred acres per mile for the balance of the two hundred and twelve miles of railway which have been constructed and are in operation, that is to say, for a distance of sixty-two miles.
- 28.** Also, to the Manitoba South-western Colonization Railway Company, Dominion lands to the extent of six thousand four hundred acres for each mile of the company's branch line of railway from Carmen to Barnsley, a distance of about six and one quarter miles.
- 29]** To the Canadian Pacific Railway Company, in addition to the subsidy authorized by the Act 53 Victoria, chapter 4, for the company's branch line running in a south-westerly and westerly direction from a point at or near Brandon for a distance of one hundred miles, Dominion lands to the extent of six thousand four hundred acres for each mile of the extension westward of the said branch line, from the western limit of the said one hundred miles to a point at or near La Roche Percée, situated in township one, range six, west of the second meridian, a distance of about sixty miles.

The said grants, and each of them, shall be made in aid of the construction of the said railways respectively, in the proportion and upon the conditions fixed by the Orders in Council made in respect thereof, and, except as to such conditions, the said grants shall be free grants, subject only to the payment by the grantees respectively, of the cost of survey of the lands and incidental expenses, at the rate of ten cents per acre in cash, on the issue of the patents therefor.

By the Act 57-58 Vic., cap. 6, 1894 (*Assented to 23rd July, 1894*):—

- \*30.** To the Rocky Mountain Railway and Coal Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a line of railway from a point at or near Olds Station, on the line of the Calgary and Edmonton Railway, in a westerly direction to the Red Deer River, and thence along the said river in a westerly direction to the coal fields, a distance of about sixty miles.
- 31.** To the Canadian Pacific Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a line of railway from a point at or near Souris on the Souris Branch of the Canadian Pacific Railway, in a westerly direction to the Pipestone Valley, a distance of about thirty-two miles.
- \*32.** To the Brandon and South-western Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a line of railway from a point in township one, in either range twenty-three or twenty-four west of the first principal meridian, to a point at or near Deloraine, a distance of about seventeen miles.
- 33.** To the Saskatchewan and Western Railway Company, Dominion lands to an extent not exceeding six thousand four hundred acres per mile for a line of railway from Minnedosa to Rapid City, a distance of about fifteen miles.

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\* The land grant subsidy to the Rocky Mountain Railway and Coal Company and the Brandon and South-western Railway Company has lapsed.



The said grants, and each of them may be made in aid of the construction of the said railways respectively, in the proportion and upon the conditions fixed by the Orders in Council made with respect thereto ; and, except as to such conditions, the said grants shall be free grants, subject only to the payment by the grantees respectively of the cost of the survey of the lands and incidental expenses, at the rate of ten cents per acre in cash on the issue of the patents therefor.

The lands authorized by this Act to be granted to the Canadian Pacific Railway Company shall be taken and held, and may be disposed of, free and clear of any encumbrance on the lands or property of the said company created before the passing of this Act.

Department of Railways and Canals.

PART IV

MISCELLANEOUS STATEMENTS

No.

SUBSIDY Agreement for the Construction of Railways

File No. of Contract.	Date of Signature of Contract.	Name of Railway.	Line of Railway to be Constructed.	Acts of Canada granting Subsidies.
	1897.			
12,806	Aug. 7..	Ottawa, Arnprior and Parry Sound Ry. Co.	From the crossing of the Northern Pacific Junction Railway to 52 miles west of Barry's Bay and across Parry Island.	60-61 V., c. 4
12,856	Aug. 26..	Coast Railway of Nova Scotia.	From Yarmouth to Port Clyde, N.S.....	60-61 V., c. 4
12,903	Sept. 6..	Canadian Pacific Ry. Co.	From Lethbridge in Territory of Alberta, through Crow's Nest Pass to Nelson, B.C.	60-61 V., c. 5
12,851	Sept. 20..	Irondale, Bancroft and Ottawa Ry. Co.	From Victoria Branch, Midland Division, Grand Trunk Railway, near Kinmount, either to Bancroft or some point near Hastings Road, P.Q.	60-61 V., c. 4
12,858	Sept. 29..	St. Stephen and Milltown Ry. Co.	From St. Stephen to Milltown, N.B.....	60-61 V., c. 4
12,825	Oct. 16..	St. Lawrence and Adirondack Ry. Co.	From Beauharnois to Caughnawaga. ....	60-61 V., c. 4
12,901	Oct. 29..	Gulf Shore Ry. Co..	From end of section subsidized to Tracadie and thence to Big Tracadie, N.B.	60-61 V., c. 4
12,959	Dec. 4..	Tilsonburg, Lake Erie and Pacific Ry. Co.	From present terminus through Tilsonburg to the Michigan Central Railway, P.Q.	60-61 V., c. 4
12,934	Dec. 4..	Ottawa and New York Ry. Co.	From Cornwall to Ottawa.....	60-61 V., c. 4
12,874	Dec. 13..	Drummond County Ry. Co.	From Moose Park to Chaudière River .....	60-61 V., c. 4
12,869	Dec. 29..	Montfort Colonization Ry. Co.	From Montfort Junction to Arundal.. ..	60-61 V., c. 4
12,944	Dec. 24..	Restigouche and Western Ry. Co.	From Campbellton, on Intercolonial Railway towards Grand Falls, N.B.	60-61 V., c. 4
	1898.			
12,982	Jan. 14..	Grand Trunk Ry. Co.	Re-build and enlarge Victoria Bridge over St. Lawrence.	60-61 V., c. 4
13,015	Mar. 1..	East Richelieu Valley Ry. Co.	From Iberville to St. Thomas, boundary of Missisquoi.	60-61 V., c. 4
13,088	Mar. 25..	Dominion Eastern Ry. Co.'	From Sunny Brae to Country Harbour and from a point at or near Country Harbour Crossroads to Guysborough, N.S.	60-61 V., c. 4
13,133	April 25..	Cobourg, Northumberland and Pacific Ry. Co.	From Cobourg to Ontario and Quebec Railway..	60-61 V., c. 4
12,960	April 29..	Inverness and Richmond Ry. Co.	From Port Hawkesbury to Port Hood and Broad Cove, N.S.	60-61 V., c. 4 Modified by O.C., June 6, 1898.

June 30th, 1898.



Department of Railways and Canals.

1.

entered into during the Fiscal Year ended 30th June, 1898.

Amount of Subsidy.		No. of miles sub- sided.	Maximum grade feet per mile.	Radius of curvature not less than.	Width of clearing each side.	Width of cutting.	Embankment.	Steel rails, lbs. per lineal yard.	Date for Completion.
Per mile.	Not exceeding.								
\$	\$		Feet.	Feet.	Feet.	Feet.	Feet.	Lbs.	
3,200	6,400 per mile.	56	66	955	50	20	15	56	Sept. 1, 1899.
3,200	6,000 per mile.	61	80	716	50	20	15	56	Sept. 1, 1899.
11,000	3,600,000	.....	106	955	50	20	15	50	S. end Kootenay Lake, Dec. 31, 1898 ; Nelson, Dec. 31, 1900.
.....	16,000	last 5	58	997	50	20	15	50	Sept. 1, 1898.
3,200	6,000 per mile.	1 <sup>14</sup> / <sub>100</sub>	80	478	50	20	15	50	Sept. 1, 1898.
3,200	6,400 per mile.	13 <sup>1</sup> / <sub>2</sub>	53	1,146	50	20	15	50	Aug. 1, 1898.
3,200	6,400 per mile.	5 <sup>1</sup> / <sub>2</sub>	53	573	50	20	15	50	Oct. 1, 1898.
3,200	6,400 per mile.	3 <sup>50</sup> / <sub>100</sub>	53	955& 717	50	20	15	56	Aug. 1, 1898.
3,200	6,400 per mile.	53 <sup>87</sup> / <sub>100</sub>	40	2,865	50	20	15	56	Nov. 1, 1898.
3,200	6,400 per mile.	42 <sup>1</sup> / <sub>2</sub>	53	2,865	50	20	15	70	Sept. 1, 1898.
2,000	66,000	33	175	573	50	20	15	56	Sept. 1, 1898.
3,200	6,400 per mile.	20	80	819	50	20	15	56	Aug. 1, 1899.
15 per cent on amount expended.	300,000	.....	.....	.....	.....	.....	.....	.....	Nov. 1, 1898.
3,200	6,400 per mile.	24	52 <sup>80</sup> / <sub>100</sub>	1,146	50	20	15	56	June 30, 1899.
3,200	6,400 per mile.	65	66	955	50	20	15	56	July 1, 1901.
3,200	6,400 per mile.	50	53	955	50	20	15	56	July 1, 1900
3,200	6,400 per mile.	53	80	1,433	50	20	15	56	Dec. 1, 1899.

WALTER S. DOULL,  
Law Clerk.

## No. 2.

STATEMENT of Contracts entered into during the Fiscal Year ended 30th June, 1898.

## 1. INTERCOLONIAL RAILWAY.

No. of Contract.	Contractor.	Date of Signature.	General Description.
12816	Rhodes, Curry & Co.....	July 5, 1897...	1200 33-inch cast-iron car wheels.
12843	B. N. Mattinson.....	Aug. 12, 1897...	Build engine shed at Spring Hill Junction.
12938	François Bégin and Joseph Bouleau.	Mar. 1, 1897...	Hauling freight and baggage between ferry boats and passenger station and freight house at Lévis, P.Q.
12861	Albert Forcade and L. Fiset.	Aug. 6, 1897...	Construct station at St. Michel, County of Bellechasse, P.Q.
*12939	Dominion Coal Co .....	June 30, 1897..	Supply 45,000 tons of coal for I. C. Ry.
12902	J. B. McManus.....	Sept. 25, 1897...	Construct stone masonry culvert at McKinley's Brook, N.B.
12967	Rhodes, Curry & Co.....	Sept. 23, 1897...	Construct brick and stone station, Moncton, N.B.
12968	Stephen Venoit.....	Nov. 4, 1897...	Paint buildings and bridges between Truro and Pictou, and buildings between Pictou Landing and Mulgrave.
12969	W. McD. Metzler.....	Nov. 4, 1897...	Paint buildings and bridges between Ste. Flavie and Campbellton, and roofs of buildings between Campbellton and Newcastle and Newcastle and Moncton.
12970	R. F. Kinnear.....	Nov. 4, 1897...	Paint station roofs between Painsec Junction and Truro, and walls of stations between Truro and Halifax.
12971	T. O. Girard... ..	Nov. 4, 1897...	Paint walls of buildings between Campbellton and Newcastle.
12972	M. B. Hurley.....	Nov. 4, 1897...	Paint roofs, walls and bridges between Lévis and Rivière du Loup.
12973	Ludlow Campbell.....	Nov. 4, 1897...	Paint buildings and bridges between Sussex and Moncton.
12974	Wm. T. Bell.....	Nov. 4, 1897...	Paint buildings and bridges between St. John and Sussex.
12975	E. T. Nesbitt.....	Nov. 16, 1897...	Construct snow shed at Harlaka station.
12981	A. J. McKnight, et al.....	Nov. 4, 1897...	Paint bridges between Pictou Landing and Mulgrave.
13002	Charles M. Lutz.....	Jan. 10, 1898...	Manufacture and supply of 650 farm-crossing gates.
13004	Dominion Bridge Co. (Ltd.).	Dec. 28, 1897...	Manufacture and supply of one steel track through pin-connected Pratt Truss Bridge.
13013	Thomas Higgs.....	Nov. 4, 1897...	Painting roofs of station buildings between Truro and Halifax.
13014	Raymond Dand.....	Jan. 12, 1898...	Supply 88 switch gates and 50 switch stands.
13016	Francis E. McManus.....	Jan. 15, 1898...	Plumbing, heating and metal work, for new station at Moncton.
13017	Peter C. Fleming.....	Jan. 11, 1898...	Re-wiring new freight shed on coal trestle wharf at Halifax, N.S.
13042	L. A. Cloutier.....	Nov. 4, 1897...	Painting buildings and bridges between Rivière-du-Loup and Campbellton.
13043	Graham & Pickles.....	Jan. 22, 1898...	Wiring new passenger station at Moncton, N.B.
13054	Rhodes, Curry & Co. (Ltd.).	Jan. 27, 1898...	Construct 10 stock cars.
13055	" " "	Jan. 27, 1898...	" 50 box freight cars.
13062	Crosen Car Mfg. Co. ....	Jan. 27, 1898...	" 50 box freight cars.
13079	City of Halifax and the Provincial Exhibition Commission.	Nov. 20, 1897...	Construct siding about 1,500 feet long, connecting Halifax Exhibition Grounds with I. C. Ry. siding on Kempt Road.
13080	John and Angus McDonald..	Feb. 21, 1898..	Manufacture and supply 3 centre-dump scows.
13140	John McGourty.....	Feb. 12, 1898...	Unload coal into I. C. Ry. sheds at St. John, N.B., and deliver it into engines at that place.
13141	Ira C. Hicks .....	Feb. 14, 1898...	Unload coal into I. C. Ry. sheds at Moncton, N.B.
13148	Jerome Roy.....	Feb. 12, 1898...	" " " Newcastle.

\* Received too late for last year's Report.

# Department of Railways and Canals.

STATEMENT of Contracts entered into during the Fiscal Year ended 30th June, 1898—  
*Continued.*

## 1. INTERCOLONIAL RAILWAY—*Continued.*

No. of Contract.	Contractor.	Date of Signature.	General Description.
13151	Railway Automatic Sales Co.	April 11, 1898...	Giving right and license of placing and maintaining 2 automatic selling machines in each station building of the I. C. Ry.
13161	John Kelly.. . . .	April 29, 1898...	Erect 1,240 rods fencing, I. C. Ry.
13162	A. J. Tingley.....	April 27, 1898...	" 3,030 " "
13163	Edward Crossman.....	April 28, 1898...	" 3,350 " "
13174	Ross & McManus.....	May 28, 1898...	Extend the I. C. Ry. at North Sydney.
13179	I. Matheson & Co. (Ltd.)...	April 28, 1898...	Construct 2 steel conical bridges.
13181	Ichabod Lewis.....	April 28, 1898...	Erect 3,600 rods fencing, I. C. Ry.
13182	Mrs. M. B. Bellavance. ....	May 3, 1898...	" 3,000 " "
13192	H. H. Cameron.....	Feb. 17, 1898...	Discharge and deliver coal at Spring Hill Junction.
13193	Joseph V. Auctil.....	May 23, 1898...	Erect 3,600 rods fencing, I. C. Ry.
13206	A. M. Peterson, <i>et al.</i> .....	June 17, 1898...	Applying and using "improved steam engine" and other patents on Government railways.
13271	Intercolonial Coal Mining Co.	June 30, 1898...	Supply 20,000 tons of coal, of 2,240 lbs. each ton.
13280	The Canada Coal and Rail-way Co.	June 30, 1898...	" 30,000 " " "

## 2. CHAMBLY CANAL.

13058	Julie Forget, <i>dit</i> Dépatie....	Feb. 9, 1898...	Construct collecting drain in Town and Parish of St. John.
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## 3. LACHINE CANAL.

13056	Onésime Martineau. ....	Feb. 9, 1898...	Construction of superstructure of one swing and stationary bridge, &c., at St. Gabriel Locks, Montreal.
13063	Dominion Bridge Co. (Ltd.)..	Feb. 19, 1898...	Construct swing bridge and a stationary bridge at St. Gabriel Locks, Montreal.
13152	The Royal Electric Co.....	May 9, 1898...	Installation of incandescent lamps and lighting of canal tolls offices, 57, Commission St., Montreal.
13184	Brewder & McNaughton ....	June 4, 1898...	Deepening course of River St. Pierre at Côte St. Paul, St. Henri and St. Gabriel Ward, Montreal.
13229	James Cochrane .. . . .	June 17, 1898...	Supply 800 cubic yards broken stone for syphon culvert, River St. Pierre.
13232	Drummond, McCall & Co. ...	May 23, 1898...	Supply and deliver iron pipes for River St. Pierre deepening.
13231	Joseph O. Labelle . . . . .	June 10, 1898...	Supply building stone for syphon culvert, River St. Pierre.
13230	The Laurentian Sand and Gravel Co.	June 17, 1898...	Supply 200 cubic yards broken stone for syphon culvert, River St. Pierre.

## 4. RIDEAU CANAL.

12889	Thomas McLaughlin... . . . .	Sept. 29, 1897...	Build masonry pivot pier, abutments and approaches thereto in connection with proposed new bridge across canal, southern end of Bank St., Ottawa.
12979	John Fleming.....	Feb. 28, 1898...	Construct, maintain and remove coffer dam at Chaffey's Locks.
12992	Dominion Bridge Co. (Ltd.) .	Jan. 20, 1898...	Construct one new steel swing bridge at Beveridge's Bay Locks.
13060	Robert Weddell . . . . .	Feb. 28, 1898...	Construct a steel rivetted swing bridge, end of Bank St., Ottawa.
13067	Hebron Harris . . . . .	Mar. 2, 1898...	Supply 4,877 cubic feet white oak timber.



STATEMENT of Contracts entered into during the Fiscal Year ended 30th June, 1898—  
*Continued.*

## 5. SAULT STE. MARIE CANAL.

No. of Contract.	Contractor.	Date of Signature.	General Description.
13115	Neal McDonald . . . . .	June 6, 1898 . . .	Dredge or excavate on south side of channel, Lower Entrance.
13196	" " . . . . .	June 10, 1898 . . .	Widening of channel on south side of channel, Lower Entrance.

## 6. ST. LAWRENCE RIVER NAVIGATION.

13168	Manning & McDonald . . . . .	May 24, 1898 . . .	Improve channel, Lake St. Francis, 2nd Hamilton Island Section.
13170	" " . . . . .	May 24, 1898 . . .	Improve channel, Lake St. Francis, 1st St. Régis Section.

## 7. SOULANGES CANAL.

12741	Bellhouse, Dillon & Co. . . . .	July 21, 1897 . . .	Supply 10,000 barrels "Sitting Lion" Portland Cement.
12880	J. & R. Miller . . . . .	Oct. 2, 1897 . . .	Build 16 pairs lock gates.
12957	Alex. Manning and Randolph Macdonald.	Dec. 20, 1897 . . .	Construct a guard lock, Section 13.
12961	Ryan & MacDonell . . . . .	Dec. 11, 1897 . . .	Re-letting of Sections Nos. 1 and 2, Cascades Point Entrance.
12996	Charles H. Raynor . . . . .	Mar. 1, 1898 . . .	Construct culverts, discharging sluices near River à la Graise, Section No. 8.
13117	C. I. de Sola . . . . .	May 9, 1898 . . .	Supply 30,000 barrels Portland Cement, "Josson" Brand.
13123	W. McNally & Co . . . . .	April 23, 1898 . . .	Supply 10,000 barrels Portland Cement, "Dyckerhoff" Brand, extra high grade quality.
13129	F. Hyde & Co. . . . .	April 28, 1898 . . .	Supply 35,000 barrels Portland Cement, "Germania or Hemmoor" Brand.
13142	Bellhouse, Dillon & Co. . . . .	June 18, 1898 . . .	Supply 30,000 barrels of "Ollson's" and 7,000 barrels "North's Condor" Portland Cement.
13194	Robert Weddell . . . . .	June 16, 1898 . . .	Construct 2 highway swing bridges over Guard Lock No. 3.

## 8. TRENT WORKS.

12849	D. Conroy . . . . .	Sept. 8, 1897 . . .	Construct 1 pivot pier and 1 end pier and abutments for highway bridge crossing Trent Canal at Rosedale.
12804	Central Bridge and Engineering Co.	Aug. 9, 1897 . . .	Construct 1 steel highway bridge at Rosedale.
13074	John E. Hayes . . . . .	Feb. 26, 1898 . . .	Raising abutments and pier under bridge crossing Otonabee River at Lakefield.
13083	Hamilton Bridge Works Co. (Ltd.)	Mar. 15, 1898 . . .	Construct and erect 1 highway bridge of 89-ft. span over Trent Canal at Concession St., Lakefield.

## Department of Railways and Canals.

STATEMENT of Contracts entered into during the Fiscal Year ended 30th June, 1898—  
*Concluded.*

### 9. WELLAND CANAL.

No. of Contract.	Contractor.	Date of Signature.	General Description.
13095	Dean Brothers.....	April 14, 1898...	Supply and deliver brass and phosphor bronze castings for year 1898.
13097	Gallagher & Cunningham....	April 4, 1898...	Supply and deliver brass and phosphor bronze castings for year 1898.
13101	John McLean . . . . .	April 16, 1898...	Supply timber and lumber for Welland Canal and branches for year 1898.

### 10. WILLIAMSBURG CANAL.

12842	Gilbert Bros. Engineering Co. (Ltd.)	Sept. 15, 1897...	Survey and remove obstructions of bottom of channel, Galops Canal.
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WALTER S. DOULL  
*Law Clerk.*

June 30th, 1898.

No.

GENERAL

## SHOWING Water Power and other Public Property Leased by the Department

Date of Signature.	Term of Lease.	Lessees.	Property Leased.	Area of Property Leased.
			<i>Beauharnois Canal.</i>	
Apl. 9, '98	During pleasure.	Cossett & Deschenes.	Pt. cad. lot 853 .....	4,000 sq. ft.
" 30, '98	21 years, renewable.	Corp. Town of Valleyfield.	To lay and maintain a sewer along Government Reserve and across canal.	
			<i>Intercolonial Railway.</i>	
Mch. 8, '98	During pleasure.	Trustees Mission Ch. St. John Baptist.	Pt. Harris property, St. John, N.B. ....	3,369 sq. ft.
June 1, '98	1 year .....	F. Pischette .....	To sell newspapers at Lévis station .....	
			<i>Chambly Canal.</i>	
Mch. 4, '97	During pleasure.	Chambly Manufacturing Co.	To lay electric cables under Chambly and Lachine Canals.	
May 31, '98	" .....	Dosithe Godin .....	Storage on Wharf No. 2, St. John's, Que..	2,500 sq. ft.
			<i>Lachine Canal.</i>	
" 1, '97	" .....	Union Cold Storage Co.	To maintain an 8-in. pipe from Basin No. 1 .....	
July 7, '97	1 yr., then pleasure.	Pierre Letendre .....	Part Tait dry dock .....	
" 22, '97	During pleasure.	Montreal Street Ry. Co.	To erect two iron lattice towers, St. Gabriel Locks.	
" 31, '97	" .....	Jas. J. Riley & Son.	To lay pipe from Guy St. to Basin No. 4..	
Sep. 12, '97	" .....	Wilfrid Marsan .....	Reserve land, new basin, No. 1 .....	400 sq. ft.
Oct. 16, '97	" .....	Grand Trunk Ry. Co.	Spur track from main siding to Montreal Rolling Mills.	
Mch. 14, '98	" .....	The Wilson Co. ....	Lot between St. Gabriel Basins Nos. 2 and 3	16,912 sq. ft.
" 21, '98	15 years .....	Montreal Stock Yard Co.	Lot No. 323 at Point St. Charles .....	6 1/4 acres.
May 21, '98	3 " .....	Construction & Paving Co.	Lot between St. Patrick St. and Canal, St. Gabriel.	18,400 sq. ft.
" 21, '98	15 " .....	Thos. A. Trenholm..	Surplus land, 4 parcels .....	over 90 arpents.
			<i>Rideau Canal.</i>	
Aug. 30, '97	During pleasure.	Central Canada Exhibition Association	Pt. lot letter I, con. C, also pt. peninsula in mid stream.	
Sep. 15, '97	" .....	Daniel Keenan .....	Pt. lots 35 and 36, Kingston .....	35 acres.
" 21, '97	" .....	Deschenes Electric Co.	Cable from Hull to Parliament Hill and along canal to basin.	
Oct. 6, '97	" .....	Russell House Co. ....	Reserve land E of Russell House .....	
May 16, '98	" .....	Corp. City of Ottawa	15-in pipe across canal from Canal St. ....	
" 25, '98	" .....	John Neville .....	Pt. lot E, con. D, tp. Nepean, w. of canal.	0 6/6 acre
Oct. 7, '97	" .....	Corp. Town Smith's Falls.	Reserve lands south side of canal .....	
			<i>Sault Ste. Marie Canal.</i>	
Aug. 24, '97	" .....	Great North Western Telegraph Co.	To lay a cable under and across canal east of movable dam.	
Oct. 27, '97	" .....	Lake Superior Power Co.	To lay electric cables across canal .....	



Department of Railways and Canals.

3.

STATEMENT.

of Railways and Canals during the Fiscal Year ended 30th June, 1898.

For what purpose used.	Amount of Water Power Leased.	Date from which Lease is reckoned.	Terms of Payment.			Remarks.
			Annual Rental.	When due each year.	When first instalment was due.	
			\$ cts.			
Drainage .....		April 1, '98	70 00	April 1...	April 1, '98	Also agreement re leasing Her Majesty from all liability
		May 1, '98	1 00	May 1...	May 1, '98	
Sunday school .....		July 1, '98	5 00	July 1...	July 1, '98	
.....		Jan. 1, '98	520 00	Quarterly.	Jan. 1, '98	
Carrying electric-ity.		May 1, '97	20 00	May 1...	May 1, '97	
Storage.....		" 1, '98	24 00	" 1..	" 1, '98	
For factory .....		" 1, '97	160 00	" 1...	" 1, '97	
.. .....		July 1, '97	1,000 00	Jan. and July 1.	Jan. 1, '98	
Carry feed wires.. ..		April 1, '97	Right to use towers.			
Gas to gas buoys.. ..		Jan. 1, '97	10 00	Jan. 1...	Jan. 1, '97	
Weigh scales... ..		Sept. 1, '97	20 00	Sept. 1...	Sept. 1, '97	
Railway .....		" 1, '97	5 00	" 1...	" 1, '97	
Storage wood and coal.		April 1, '98	169 12	April 1...	April 1, '98	
Abattoir.....		Feb. 1, '98	1,000 00	Feb. 1...	Feb. 1, '98	
Asphalt .....		May 1, '98	200 00	May 1...	May 1, '98	
Pasturage .....		" 1, '98	81 00	" 1...	" 1, '98	
Exhibition.....		Aug. 1, '98	5 00	Aug. 1...	Aug. 1, '97	
Pasturage .....		" 1, '98	15 00	" 1...	" 1, '97	
Electrical pur-poses.		Sept. 1, '98	1 00	Sept. 1...	Sept. 1, '97	
Access to rooms.. ..		Nov. 1, '98	10 00	Nov. 1...	Nov. 1, '97	
Water works.....		June 1, '98	10 00	June 1...	June 1, '98	
Gardening.....		April 1, '98	25 00	April 1...	April 1, '98	
Pile ties, cord-wood, &c.		Sept. 1, '97	1 00	Sept. 1...	Sept. 1, '97	
.....		Sept. 1, '97	5 00	" 1...	" 1, '97	
Transmission of power.		June 1, '97	5 00	June 1..	June 1, '97	

GENERAL STATEMENT showing Water Power and other Public Property

Date of Signature.	Term of Lease.	Lessees.	Property Leased.	Area of Property Leased.
			<i>Welland Canal.</i>	
Sep. 29, '97	During pleasure.	Corp. Town Welland	Electric cable under canal...	
Oct. 6, '97	" ..	O. H. Rounds.....	Pt. lot 26, con. 5, tp. Crowland.....	109 acres.
Feb. 11, '98	" ..	St. Catharines Elec. Light and Power Co.	Electric cable across bottom new Welland Canal.	
May 5, '98	" ..	Producers Oil, Gas and Mining Co.	Lay natural gas pipe along east side of canal from Humberstone to Welland.	
June 16, '98	21 years .....	Corp. City of St. Catharines.	Surplus water through Higgins' weir into Beaver Dam Creek, old canal.	
July 15, '97	During pleasure.	Richard Hutton ....	Pt. lot 21, con. 2, tp. Grantham ..	20.75 acres.
Oct. 8, '97	21 years .....	Cataract Power Co..	Construct raceway from Allanburg and use 100 cub. ft. surplus water per second.	

June 30th, 1898.

# Department of Railways and Canals.

Leased by the Department of Railways and Canals, &c.—*Concluded.*

For what purpose used.	Amount of Water Power Leased.	Date from which Lease is reckoned.	Terms of Payment.			Remarks.
			Annual Rental.	When due each year.	When first instalment was due.	
			\$ cts.			
Fire alarm .....		Sept. 1, '97	1 00	Sept. 1...	Sept. 1, '97	
Marble shop and yard.		July 1, '97	28 00	July 1...	July 1, '97	
Electrical purposes.		Feb. 1, '98	5 00	Feb. 1...	Feb. 1, '98	
Transmit natural gas.		April 1, '98	1 00	April 1...	April 1, '98	
Water works.....	Surplus water 50 c.ft per sec	Feb. 1, '98	500 00	Feb. 1 and Aug. 1.	Feb. 1, '98	
Pasturage.....		Oct. 1, '96	40 00	Oct. 1...	Oct. 1, '96	
Manufacturing & mechanical purposes.	100 c. ft. per sec.	Jan. 1, '98	3,000 00	Jan. 1 and July 1.	June 1, '98	

WALTER S. DOULL,  
*Law Clerk.*



No. 4.

PROPERTY conveyed and damages released to the Department of Railways and Canals during the fiscal year ended 30th June, 1898.

Date of Signature.	Grantor.	Lot.	District.	County.	Area, acres.	Amount.	Remarks.
Aug. 18, 1897.	Joseph Julien.		<i>Beauharnois Canal.</i>			\$ cts.	
			St. Thimothee	Beauharnois		275 00	Release, accumulation of snow and ice under culvert.
Dec. 6, 1897.	Omer Payment.		"	"		10 00	Release, damages to about 40 bus. of potatoes.
			<i>Chambly Canal.</i>				
July 19, 1897.	Timothee Dupuis.	Cad. 23.	St. Luc	St. Jean		350 00	Release, damages.
			<i>Cornwall Canal.</i>				
July 15, 1897.	William I. Sheets.	Pt. 7, Sheiks Island.	Cornwall	Stormont	12 00	2,184 03	
Feb. 1, 1898.	Emma C. Keazar.	Pt. W $\frac{1}{2}$ 31, Con. 1.	"	"	0 31	250 00	
May 21, 1898.	John G. Snetsinger.		"	"		12,000 00	Release, loss of roller mill and machinery, and stoppage of same.
			<i>C. P. Railway.</i>				
July 3, 1897.	C. Hay, et al.	Pts. 193 & 194	Parish of St. Andrews.		{ 1 70 1 70 }	50 00	Torrens Certificate.
Nov. 11, 1897.	Mrs. P. Sinclair, re Turner.	S. N. W. $\frac{1}{4}$ , Sec. 36, Tp. 12, R. 7 East.	Pembina Branch.		{ 6 32 5 12 6 00 }		
			<i>Cape Breton Railway.</i>				
Feb. 18, 1898.	Murdock McPhee.		George's River.	Cape Breton		148 00	and \$241 costs, damages.
			<i>Intercolonial Railway.</i>				
May 11, 1898.	Charles, W. Drury, trustee.		Portland	St. John		2,099 02	Release for expropriated lands and damages. (Last will and testament of Chas. Drury).
			<i>Rideau Canal.</i>				
Aug. 28, 1897.	Robert Kells, et ux.	E. $\frac{1}{2}$ 8 & W. $\frac{1}{2}$ 9, Con. 6.	Storrington.	Frontenac	2 00	23 00	Release, damages.
" 20, 1897.	John R. Hodgson, et al.	S. $\frac{1}{2}$ 5, Con. 6.	"	"	2 50	32 00	" "

# Department of Railways and Canals.

"	20, 1897.	Edwin Makin, <i>et ux.</i>	W. $\frac{1}{2}$ 8 & E. $\frac{1}{2}$ 7, Con. 6.	"	"	6.25	70 00	"	"
"	19, 1897.	C. Langwith, <i>et ux.</i>	11 & 12, Con. 6.	"	"	46.00	515 00	"	"
"	19, 1897.	John Toland, <i>et ux.</i>	1, Con. 5.	"	"	3.00	33 00	"	"
"	19, 1897.	William Shannon, <i>et al.</i>	11 & 12, Con. 6.	"	"	6.50	73 00	"	"
"	19, 1897.	Andrew Jackson, <i>et al.</i>	W. $\frac{1}{2}$ 7, Con. 6.	"	"	5.75	65 00	"	"
"	20, 1897.	Robert Greenlees, <i>et ux.</i>	Pts. 2 & 3, Con. 5.	"	"		23 00	"	"
"	17, 1897.	Richard Webb, <i>et ux.</i>	4, Con. 5.	"	"		45 00	"	"
Sept. 30, 1897.		Jane Toland, <i>et al.</i>	E. $\frac{1}{2}$ 6, Con. 6.	"	"		300 00	"	"
Nov. 18, 1897.		John Tierney.	Pt. 33, Con. 10.	"	"	0.25	50 00	"	"
Feb. 11, 1896.		John Duan.	Pt. sub-lots 62 & 63 of Tp. lot 22.	Gloucester	Carleton	0.46	1 00	Received too late for last report.	
<i>Soulanges Canal.</i>									
July 31, 1897.		Maxime Leroux.	Pt. 348.	St. Joseph de Soulanges.	Soulanges.	6.00	3,950 00	Principal.	
"	31, 1897.	Justinien Thauvette.	Pt. 350 & 357.	"	"	6.15	1,522 05	Interest.	
"	30, 1897.	Damase Séguin.	Pt. 143 & 144.	"	"	3.03	3,750 00	Principal.	
Oct. 21, 1897.		Honoré Leroux.	Pt. 197.	St. Ignace du Coteau du Lac	"	4.89	1,444 99	Interest.	
Nov. 24, 1897.		Jean Bte. Gamelin.	16, 17, 18, 19 & 20.	St. Michel de Vaudreuil.	Vaudreuil	4.33	4,729 80	Principal.	
"	24, 1897.	Dne. Odile Daoust.	51 & 60.	"	"		1,822 53	Interest.	
"	22, 1897.	Gatien Seguin.	Pt. 7, 8 & 9.	St. Joseph de Soulanges.	Soulanges.	5.88	1,400 00	Principal.	
Aug. 13, 1897.		Heirs P. S. Aymon, <i>et al.</i>	44, 45, 46, 47, 64, 65, 66 & 67	St. Michel de Vaudreuil.	Vaudreuil	5.63	558 36	Interest.	
Dec. 28, 1897.		Abraham Sauvé.	349.	St. Joseph de Soulanges.	Soulanges.	5.67	355 00	Principal.	
Jan. 11, 1898.		Paul Veronneau.	Pt. 352.	"	"		110 28	Interest.	
"	27, 1898.	Zenon Lafrance.	61 & 50.	St. Michel de Vaudreuil.	Vaudreuil		950 00	Principal.	
"	21, 1898.	Leon Lefebvre, <i>et al.</i>	40 & 71.	"	"		298 27	Interest.	
Feb. 16, 1898.		P. A. Q. V. S. de Beaujeu.	Pt. 10.	St. Ignace du Coteau du Lac	"		8,062 52	Principal.	
"	16, 1898.	"	144 & 147.	"	"		3,257 25	Interest.	
"	11, 1898.	Timothee Leroux.	Pts. 437, 435 & 434.	St. Joseph de Soulanges.	Soulanges.		446 00	Principal.	[of way.
Jan. 28, 1898.		Emery Thauvette.	Pts. 358 & 351.	"	"	7.83	300 00	Interest.	Release of right
"	27, 1898.	Odile Leroux, <i>et al.</i>	407.	"	"		86 70	Principal.	
"	26, 1898.	Edouard Dumesnil.	Pt. 360.	"	"		3,022 00	Interest.	
May 4, 1898.		David Leger, <i>et al.</i>	Pts. 428 & 431.	"	"		1,226 42	Principal.	
Feb. 8, 1898.		P. A. Q. V. S. de Beaujeu.	Pt. 9.	St. Ignace du Coteau du Lac	"		5,535 90	Interest.	
<i>Heirs of Emmanuel Dumesnil.</i>									
"	20, 1897.	Edwin Makin, <i>et ux.</i>	W. $\frac{1}{2}$ 8 & E. $\frac{1}{2}$ 7, Con. 6.	"	"	6.25	70 00	"	"
"	19, 1897.	C. Langwith, <i>et ux.</i>	11 & 12, Con. 6.	"	"	46.00	515 00	"	"
"	19, 1897.	John Toland, <i>et ux.</i>	1, Con. 5.	"	"	3.00	33 00	"	"
"	19, 1897.	William Shannon, <i>et al.</i>	11 & 12, Con. 6.	"	"	6.50	73 00	"	"
"	19, 1897.	Andrew Jackson, <i>et al.</i>	W. $\frac{1}{2}$ 7, Con. 6.	"	"	5.75	65 00	"	"
"	20, 1897.	Robert Greenlees, <i>et ux.</i>	Pts. 2 & 3, Con. 5.	"	"		23 00	"	"
"	17, 1897.	Richard Webb, <i>et ux.</i>	4, Con. 5.	"	"		45 00	"	"
Sept. 30, 1897.		Jane Toland, <i>et al.</i>	E. $\frac{1}{2}$ 6, Con. 6.	"	"		300 00	"	"
Nov. 18, 1897.		John Tierney.	Pt. 33, Con. 10.	"	"	0.25	50 00	"	"
Feb. 11, 1896.		John Duan.	Pt. sub-lots 62 & 63 of Tp. lot 22.	Gloucester	Carleton	0.46	1 00	Received too late for last report.	
<i>Soulanges Canal.</i>									
July 31, 1897.		Maxime Leroux.	Pt. 348.	St. Joseph de Soulanges.	Soulanges.	6.00	3,950 00	Principal.	
"	31, 1897.	Justinien Thauvette.	Pt. 350 & 357.	"	"	6.15	1,522 05	Interest.	
"	30, 1897.	Damase Séguin.	Pt. 143 & 144.	"	"	3.03	3,750 00	Principal.	
Oct. 21, 1897.		Honoré Leroux.	Pt. 197.	St. Ignace du Coteau du Lac	"	4.89	1,444 99	Interest.	
Nov. 24, 1897.		Jean Bte. Gamelin.	16, 17, 18, 19 & 20.	St. Michel de Vaudreuil.	Vaudreuil	4.33	4,729 80	Principal.	
"	24, 1897.	Dne. Odile Daoust.	51 & 60.	"	"		1,822 53	Interest.	
"	22, 1897.	Gatien Seguin.	Pt. 7, 8 & 9.	St. Joseph de Soulanges.	Soulanges.	5.88	1,400 00	Principal.	
Aug. 13, 1897.		Heirs P. S. Aymon, <i>et al.</i>	44, 45, 46, 47, 64, 65, 66 & 67	St. Michel de Vaudreuil.	Vaudreuil	5.63	558 36	Interest.	
Dec. 28, 1897.		Abraham Sauvé.	349.	St. Joseph de Soulanges.	Soulanges.	5.67	355 00	Principal.	
Jan. 11, 1898.		Paul Veronneau.	Pt. 352.	"	"		110 28	Interest.	
"	27, 1898.	Zenon Lafrance.	61 & 50.	St. Michel de Vaudreuil.	Vaudreuil		950 00	Principal.	
"	21, 1898.	Leon Lefebvre, <i>et al.</i>	40 & 71.	"	"		298 27	Interest.	
Feb. 16, 1898.		P. A. Q. V. S. de Beaujeu.	Pt. 10.	St. Ignace du Coteau du Lac	"		8,062 52	Principal.	
"	16, 1898.	"	144 & 147.	"	"		3,257 25	Interest.	
"	11, 1898.	Timothee Leroux.	Pts. 437, 435 & 434.	St. Joseph de Soulanges.	Soulanges.		446 00	Principal.	[of way.
Jan. 28, 1898.		Emery Thauvette.	Pts. 358 & 351.	"	"	7.83	300 00	Interest.	Release of right
"	27, 1898.	Odile Leroux, <i>et al.</i>	407.	"	"		86 70	Principal.	
"	26, 1898.	Edouard Dumesnil.	Pt. 360.	"	"		3,022 00	Interest.	
May 4, 1898.		David Leger, <i>et al.</i>	Pts. 428 & 431.	"	"		1,226 42	Principal.	
Feb. 8, 1898.		P. A. Q. V. S. de Beaujeu.	Pt. 9.	St. Ignace du Coteau du Lac	"		5,535 90	Interest.	
<i>Heirs of Emmanuel Dumesnil.</i>									
"	20, 1897.	Edwin Makin, <i>et ux.</i>	W. $\frac{1}{2}$ 8 & E. $\frac{1}{2}$ 7, Con. 6.	"	"	6.25	70 00	"	"
"	19, 1897.	C. Langwith, <i>et ux.</i>	11 & 12, Con. 6.	"	"	46.00	515 00	"	"
"	19, 1897.	John Toland, <i>et ux.</i>	1, Con. 5.	"	"	3.00	33 00	"	"
"	19, 1897.	William Shannon, <i>et al.</i>	11 & 12, Con. 6.	"	"	6.50	73 00	"	"
"	19, 1897.	Andrew Jackson, <i>et al.</i>	W. $\frac{1}{2}$ 7, Con. 6.	"	"	5.75	65 00	"	"
"	20, 1897.	Robert Greenlees, <i>et ux.</i>	Pts. 2 & 3, Con. 5.	"	"		23 00	"	"
"	17, 1897.	Richard Webb, <i>et ux.</i>	4, Con. 5.	"	"		45 00	"	"
Sept. 30, 1897.		Jane Toland, <i>et al.</i>	E. $\frac{1}{2}$ 6, Con. 6.	"	"		300 00	"	"
Nov. 18, 1897.		John Tierney.	Pt. 33, Con. 10.	"	"	0.25	50 00	"	"
Feb. 11, 1896.		John Duan.	Pt. sub-lots 62 & 63 of Tp. lot 22.	Gloucester	Carleton	0.46	1 00	Received too late for last report.	







PROPERTY conveyed and damages released to the Department of Railways and Canals, &c.—*Concluded.*

Date of Signature.	Grantor.	Lot.	District.	County.	Area, acres.	Amount.	Remarks.
			<i>Williamshurg Canals—Con.</i>			\$ cts.	
Sept. 20, 1897.	Michael Shaver, <i>et ux.</i> .....	Pt. W. $\frac{1}{2}$ 37, Con. 1.	Matilda	Dundas.	0 19	125 00	
June 30, 1897.	Sophia Bush .....	Pt. 9 W. side of West St.	Cardinal	Grenville	0 066	600 00	
Sept. 20, 1897.	James A. Shaver, <i>et ux.</i> .....	Pt. W. $\frac{1}{2}$ 37, Con. 1.	Matilda	Dundas.	0 34	150 00	Received too late for last report.
Oct. 8, 1897.	William A. Feader, <i>et ux.</i> .....	Pt. 28, Con. 1.	"	"	6 25	2,600 00	
" 9, 1897.	John Saver, <i>et al.</i> .....	Pt. W. $\frac{1}{2}$ 35, Con. 1.	"	"	4 49	1,000 00	
" 9, 1897.	George F. Benson, <i>et ux.</i> .....	Pt. 37, Con. 1.	"	"	0 48	300 00	
Nov. 15, 1897.	George N. Hanes, <i>et ux.</i> .....	Pt. E. $\frac{1}{2}$ 29, Con. 1	"	"	6 25	2,500 00	
" 20, 1897.	Thomas A. Page, <i>et ux.</i> .....	Pt. E. $\frac{1}{2}$ 35, Con. 1.	"	"	0 40	150 00	
June 7, 1897.	Norman Lavere, <i>et ux.</i> .....	{ 16&17 N. side of Elgin St. { 20&21 S. side of North St.	Cardinal	Grenville	0 46	1,075 00	Received too late for last report.
Jan. 13, 1898	John F. Sheedy, <i>et ux.</i> .....	15 & 16 Block Z, S. side of Morrison St.	"	"	0 29	150 00	
16 Mch. 21, 1898.	John E. Magee & Mary E. McNairn.	Pt. W. $\frac{1}{2}$ Tp. Lot 6, Con. 1.	Edwardsburgh	"	0 64	2,650 00	
" 3, 1898.	Silas James Webb .....	Pt. W. $\frac{1}{2}$ 19, Con. 1.	"	"	1 00	210 00	
Feb. 12, 1898.	Jerusha Fisher.....	E. pt. of Village Lot 54, Block 10.	Iroquois	Dundas.	0 20	1,025 00	
Nov. 23, 1897.	Charles C. Brouse.....	Pt. E. $\frac{1}{2}$ 25, Con. 1	Matilda	"	2 80	280 00	
Mar. 16, 1898.	Trustees Methodist Episcopal Church of Cardinal.	Pt. Lot F, E. side Victoria St.	Cardinal	Grenville	0 72	1,425 00	
" 26, 1898.	G. A. Shaver, <i>et ux.</i> . . . .	Pt. 12, S. side Elgin St.	"	"	0 004	60 00	
" 24, 1898.	Helen Benson, <i>et al.</i> . . . .	Pt. E. $\frac{1}{2}$ of W. $\frac{1}{2}$ of Tp. Lot 4	Edwardsburgh	"	1 21	800 00	[son. Executors of W. T. Ben-
Feb. 1, 1898.	Austin E. Fetterly, <i>et al.</i> . .	Pt. 25, Con. 1.	Osnabruk	Stormont.	0 06	55 00	Masonic Lodge 256.
Apl. 13, 1898.	Mary E. McNairn.....	Pt. W. $\frac{1}{2}$ Tp. Lot 6, Con. 1.	Edwardsburgh	Grenville		1,793 27	Release.
" 13, 1898.	John E. Magee.....	" " "	"	"		46 38	"
Mch. 26, 1898.	Charles C. Farran.....	Pt. front 25, Con. 1.	Osnabruk	Stormont	0 90	14,630 00	
Nov. 15, 1897.	John R. Farran, <i>et ux.</i> . . .	Pt. Village Lot 1, (pt. 25, Con. 1).	"	"	0 07	375 00	
Oct. 7, 1897.	Charles C. Farran. . . . .	Pt. Village Lot 4, (pt. 25, Con. 1).	"	"	0 04	220 00	
" 7, 1897.	C. C. & J. R. Farran.....	Pts. E. 27, Con. 1	"	"	4 57	1,110 00	
Apl. 4, 1898.	Charles C. Farran, <i>et al.</i> . .	{ Pt. W. $\frac{1}{2}$ 26, Con. 1 { Pt. 25, Con. 1.			2 09		
May 6, 1898.	Thos. McDonald, <i>et ux.</i> . . .	{ Pt. W. $\frac{1}{2}$ 25, Con. 1 { Pt. 6, Blk. F.			0 02	1,030 00	
" 7, 1898.	L. & C. E. Cameron and wives.	Pts. E. $\frac{1}{2}$ 24, Con. 1.	Morrisburg	Dundas.	0 39	300 00	
			Matilda	"	1 00	16,000 00	
					0 41		

Department of Railways and Canals.

" 17, 1898.	William Dillon.....	Pt. W. $\frac{1}{2}$ 9, Con. 1.....	Edwardsburgh.....	Grenville.....	2.77	625 00
July 31, 1897.	Maria E. Vancamp.....	28 N. side Elgin St.....	Cardinal.....	".....	0.13	540 00
" 30, 1897.	C. J. Farley, <i>et ux</i> .....	Pt. 22, N. side Lambert St.	".....	".....	0.05	125 00
" 30, 1897.	Margaret Kelly.....	Pt. 11, E. side Walter St., S. Morrison St., Blk. Z.	".....	".....	0.11	225 00
" 15, 1897.	Ezra Lesperance, <i>et ux</i> ...	Pts. Lots P & Q, N. side Dundas St.	".....	".....	0.12	425 00
" 15, 1897.	Samuel Ross, <i>et ux</i> .....	Pt. E. $\frac{1}{2}$ of W. $\frac{1}{2}$ 4 between Queen's Highway and G. T. Ry.	".....	".....	1.96	1,600 00
" 15, 1897.	William Clark, <i>et ux</i> .....	Pt. Lot Letter, O, N. side Dundas St.	".....	".....	0.03	150 00
" 3, 1897.	William Rainow, <i>et ux</i> ...	Pt. W. $\frac{1}{2}$ Tp. Lot 5, N. side Morrison St. & S. of Ry.	".....	".....	0.16	750 00
" 30, 1897.	Richard Braithwaite, <i>et ux</i> .	2 & 3, S. side Morrison St., W. of Waddell St.	".....	".....	0.27	1,800 00
" 30, 1897.	Seth Byrnes, <i>et ux</i> .....	19, N. side Lambert St., Blk. Z.	".....	".....	0.23	1,000 00
" 30, 1897.	Jamil Covil, <i>et ux</i> .....	8 & 9, W. side Walter St., S. Morrison St.	".....	".....	0.20	225 00
Sept. 11, 1897.	Athelia J. Weaver, <i>et al</i> ...	Pt. W. $\frac{1}{2}$ 25.....	Osnabruk.....	Stormont.....	1.95	2,725 00
July 26, 1897.	Thomas Hunter.....	Pts. 2 & 3, Con. 1.....	Cardinal.....	Grenville.....	5.63	2,725 00
" 2, 1897.	Mary Thompson, <i>et al</i> ...	Pt. E. $\frac{1}{2}$ Tp. Lot 4, S. of G. T. Ry. and N. of Canal.	".....	".....	5.44	4,250 00
Aug. 3, 1897.	Thomas Hunter, <i>et ux</i> .....	Pt. W. $\frac{1}{4}$ Tp. Lot 3, S. of pt. W. $\frac{1}{4}$ sold to the Queen.	".....	".....	0.13	100 00
Sept. 23, 1897.	Richard H. Bradfield.....	20, Blk. 96.....	Morrisburgh.....	Dundas.....		275 00
" 11, 1897.	Samuel Johnson.....	Pt. E. $\frac{1}{2}$ 26, Con. 1.....	Osnabruk.....	Stormont.....	1.75	25 00
July 30, 1897.	G. L. Kustis, <i>et ux</i> .....	19, 27 & pt. 26, N. Elgin St.	Cardinal.....	Grenville.....	0.53	825 00
" 30, 1897.	Samuel Marlatt.....	13 & pt. 23, S. of Morrison St. and N. Lambert St.	".....	".....	0.18	250 00
Sept. 11, 1897.	Emily Steen.....	Pts. 27 & 28, Con. 1.....	Osnabruk.....	Stormont.....	1.53	25 00

Release, damages to buildings.

OTTAWA, 30th June, 1898.

WALTER S. DOULL,  
*Law Clerk.*



No. 5.

Showing Properties Leased to the Department of Railways and Canals during the Fiscal Year ended 30th June, 1898.

Date of Signature.	Term of Lease.	Lessor.	Property Leased.	For what purpose used.	Date from which Lease is reckoned.	Rental.	When payable.	When first instalment was due.	Remarks.
April 22, 1897.	5 years.	The Royal Insurance Co.	6 rooms in their building, Montreal.	Offices.	May 1, 1897.	262 50	Quarterly.	Aug. 1 1897.	
Feb. 1, 1898.	Up to June 30, '98.	Grand Trunk Ry. Co.	Their line from Ste. Rose lie station to Bonaventure station.	I.C.R. extension	Mch. 1, 1898.	140,000 00	Monthly.	Mch. 1, 1898.	
" "	"	Drummond County Ry. Co.	Their line from Ste. Rose lie to Chaudière.	"	" "	70,000 00	"	"	
Mch. 22, 1898.	3 years.	Montreal Board of Trade.	Rooms Nos. 113 and 114, Board of Trade building, Montreal.	Offices.	May 1, 1898.	1,500 00	Quarterly.	May 1, 1898.	
Dec. 1, 1897.	1 year	Bell Telephone Co.	Instruments in overseer's office, Ste. Anne de Bellevue.	Telephone.	Dec. 1, 1897.	25 00	Semi annual	Dec. 1, 1897.	
Feb. 1, 1898.	10 years	Mary Enright	Houses No. 26 and 28 St. Lawrence, Lachine.	Collector's office.	May 1, 1898.	\$250 for 1st 2 years and \$300 thereafter.	Quarterly	Aug. 1, 1898.	

WALTER S. DOULL,  
*Law Clerk.*

June 30th, 1898.

Department of Railways and Canals.

PART V.

CANAL STATISTICS





# Department of Railways and Canals.

## CANAL STATISTICS

FOR

SEASON OF NAVIGATION 1897.

### REVENUE.

The total revenue, exclusive of hydraulic rents for two years, is as follows :

For 1896.....	\$ 350,061 03
For 1897.....	346,758 87

By comparing the statistics of 1896 with 1897, it will be seen that the gross revenue has decreased \$3,302.16.

The increases and decreases are as follows :—

	Increase.	Decrease.
On the Welland Canal.....		\$ 6,432 10
“ St. Lawrence Canals.....	822 86	
“ Chambly Canal.....		\$ 847 21
“ Ottawa Canals.....	3,525 72	
“ Rideau Canal.....	1,162 13	
“ St. Peter's Canal.....		1,854 66
“ Trent Valley Canals.....	281 13	
“ Murray Canal.....	49 97	
“ Sault Ste. Marie Canal.....		10 00
Total.....	\$5,841 81	\$9,143 97
Total decrease.....		3,302 16

STATEMENT of the Revenue together with the increases and decreases of all the Canals for the seasons of Navigation from 1888 to 1897 inclusive.

Years.	Revenue.	Increase.	Decrease.
1888.....	\$321,433 93	\$10,951 58	
1889.....	381,109 31	59,675 38	
1890.....	348,059 51		\$33,049 80
1891.....	350,351 97	2,292 46	
1892.....	358,711 04	8,359 07	
1893.....	348,012 00		10,699 04
1894.....	307,824 67		40,187 33
1895.....	283,211 41		24,613 26
1896.....	350,061 03	66,849 62	
1897.....	346,758 87		3,302 16

In compliance with the renewed request of forwarders and shippers of Montreal for a continuance of the reduction of tolls on certain agricultural products, His Excellency the Governor General in Council on 17th April, 1897, authorized a reduction of canal tolls, as follows :—

For the season of 1897, the canal tolls for the passage of the following food products, wheat, indian corn, pease, barley, rye, oats, flax-seed and buckwheat for passage east-

ward through the Welland Canal, shall be ten cents per ton, and for passage eastward through the St. Lawrence Canals only, ten cents per ton, payment of the said tolls of ten cents per ton for passage through the Welland Canal to entitle these products to free passage through the St. Lawrence Canals.

In consequence of the reduced rates of tolls as above, being applicable to the said food products, irrespective of their destination, the reduced rate of ten cents a ton only was collected, and therefore no refunds were made on these articles for 1897.

It may be observed, however, that the reduction of tolls from twenty to ten cents per ton on the articles referred to, for passage through the Welland Canal, amounts to \$76,146.90.

The quantity of barley, corn, oats, pease, rye and wheat passed down the Welland Canal, from ports west of Port Colborne for a period of sixteen years is as follows :—

QUANTITY PASSED DOWN TO MONTREAL.		QUANTITY ON WHICH FULL TOLLS WERE PAID.	
		To ports in Ontario.	Quantity from U.S. Ports to U.S. Ports.
	Tons.	Tons.	Tons.
1882.....	180,694		63,881
1883.....	186,814	10,650	121,876
1884.....	142,194	12,153	104,537
1885.....	96,569	11,909	117,346
1886.....	203,940	9,881	151,551
1887.....	185,034	11,838	134,868
1888.....	160,358	25,599	169,664
1889.....	267,769	19,075	213,766
1890.....	288,513	16,899	245,932
1891.....	295,509	6,805	202,710
1892.....	261,954	8,942	201,540
1893.....	501,806	25,555	222,958
1894.....	* 273,651	16,699	203,979
1895.....	231,491	32,096	133,823
1896.....	461,049	73,386	160,372
1897.....	560,254	53,257	157,756

The tolls on grain for passage through the Welland Canal prior to 1884, were 20 cents a ton, since that date, however, reductions have been made by Orders in Council from year to year as follows :—Upon the urgent request of forwarders and others interested in the grain trade, a reduction was made of one-half the usual rate of tolls on grain passing down the Welland Canal and the St. Lawrence Canals to Montreal ; and in 1885 tolls were reduced to 2 cents a ton, and thereafter from year to year, including 1891.

In 1892 the tolls were reduced to 2 cents a ton on grain passed down the Welland and St. Lawrence Canals and exported, and in such cases only.

In 1893, by Order in Council of 13th of February, the tolls were reduced to ten cents a ton on grain passing eastward through the Welland Canal irrespective of its destination, and the same rate of tolls for 1894 were allowed by O. C., 16th April, 1894.

For the year 1895 (O. C., April 1st, 1895,) the same rate of tolls was allowed as was granted for the year 1894.

For the year 1896 (O. C., April 23rd, 1896,) the same rate of tolls was allowed as was granted for the year 1895.

\*Of the quantity of grain passed down to Montreal there were transhipped at Ogdensburg in 1891 17,817 tons, in 1892 4,341 tons, in 1893 71,445 tons, in 1894 23,030 tons, in 1895 18,987 tons, in 1896, 77,355 tons and in 1897, 89,659.

## Department of Railways and Canals.

For the year 1897 (O. C., April 17th, 1897,) the same rate of tolls was allowed as was granted for the year 1896.

The rate through the St. Lawrence Canals only, was 10 cents a ton.

It may be remarked that goods having paid full tolls on the Welland Canal are allowed to pass down the St. Lawrence Canals to Montreal free from payment of any further tolls.

During the last decade the quantity of agricultural products, as above passed down the Welland and St. Lawrence Canals to Montreal, has increased from 160,358 tons in 1888 to 560,254 tons in 1897 ; and the quantity passed down the Welland Canal from United States ports to United States, has decreased from 169,664 to 157,756 tons for the same years.

The quantity of barley, buckwheat, corn, oats, pease, rye and wheat, arrived at Montreal via Grand Trunk and Canadian Pacific Railways for a period of 13 years, is reported as follows :—

	Tons.
For 1885.....	160,821
1886.....	165,613
1887.....	191,760
1888.....	113,794
1889.....	94,943
1890.....	119,208
1891.....	184,410
1892.....	291,680
1893.....	147,610
1894.....	60,666
1895.....	51,114
1896.....	153,717
1897.....	228,586

The quantity of the same articles passed down the whole length of the St. Lawrence Canals to Montreal, for the same period was :—

	Tons.
For 1885.....	134,824
1886.....	272,133
1887.....	237,881
1888.....	166,191
1889.....	275,414
1890.....	242,571
1891.....	320,434
1892.....	302,899
1893.....	532,084
1894.....	288,015
1895.....	247,550
1896.....	495,898
1897.....	560,254



Comparative shipments of grain by the St. Lawrence route, and rail and water via the state of New York, are as follows —

QUANTITY OF GRAIN TO SEA-BOARD BY COMPETING ROUTES.

The quantity of grain and pease passed down the whole length of the St. Lawrence Canals to Montreal, is as follows :—

	Tons.
For 1896.....	495,898
1897.....	560,254
Showing an increase of .....	64,356

The quantity of grain and pease carried to Montreal via Canadian Pacific and Grand Trunk Railways, is reported as follows :—

	Tons.
For 1896.....	153,717
1897.....	228,586
Showing an increase of .....	74,869

The quantity of grain arrived at tide-water by New York Canals, is reported as follows :—

	Tons.
For 1896.....	753,039
1897.....	569,362
Showing a decrease of .....	183,677

The quantity of grain carried to tide-water by the New York railways, is reported as follows :—

	Tons.
For 1896.....	3,864,760
1897.....	4,132,740
Showing an increase of .....	267,980

The increases and decreases for 1897 as compared with 1896 on the several routes, competing for the carrying trade to the sea-board, are as follows :—

	Increase.	Decrease.	Increase per cent.	Decrease.
On the St. Lawrence Canals.....	64,356	.....	12·98	.....
do Canadian Pacific and Grand Trunk Railways.....	74,869	.....	48·74	.....
do New York Canals.....	.....	183,677	.....	24·39
do do Railways.....	267,980	.....	6·93	.....

## Department of Railways and Canals.

By reference to Appendix U, it will be seen that the quantity of freight from ports west of Port Colborne to the United States ports, Oswego, Ogdensburg, &c., has increased from 234,254 tons in 1886 to 285,963 tons in 1897, and the quantity to Ontario ports, between Port Dalhousie and Cornwall, has increased from 118,127 tons in 1886 to 169,246 tons in 1897. The quantity passed down to Montreal shows an increase from 244,514 tons in 1886 to 581,047 tons in 1897.

### TRANSHIPMENT OF GRAIN.

The quantity of grain passed down the Welland Canal in Canadian and United States vessels to Kingston for fourteen years, is as follows:—

In Canadian vessels there were in—

				Tons.
1884,	111	cargoes, with an aggregate quantity of.....		70,475
1885,	75	do do .....		45,639
1886,	244	do do .....		143,330
1887,	284	do do .....		178,233
1888,	182	do do .....		143,025
1889,	208	do do .....		165,117
1890,	203	do do .....		184,275
1891,	209	do do .....		190,664
1892,	158	do do .....		159,018
1893,	146	do do .....		148,962
1894,	125	do do .....		159,145
1895,	123	do do .....		136,617
1896,	196	do do .....		227,912
1897,	180	do do .....		229,265

In United States vessels there were in—

				Tons.
1884,	117	cargoes with an aggregate quantity of.....		75,787
1885,	79	do do .....		55,982
1886,	97	do do .....		62,222
1887,	19	do do .....		12,477
1888,	60	do do .....		43,667
1889,	114	do do .....		108,358
1890,	35	do do .....		35,560
1891,	77	do do .....		90,153
1892,	89	do do .....		109,812
1893,	257	do do .....		328,269
1894,	84	do do .....		106,236
1895,	56	do do .....		73,987
1896,	158	do do .....		217,978
1897,	197	do do .....		285,847

Seven vessels took cargoes of 2,324 tons through to Montreal intact in 1897, three of 1,176 in 1896, four of 1,344 tons in 1895, two cargoes of 810 tons in 1894, none in 1893, two in 1892 of 924 tons, and three in 1891 of 1,441 tons. Sixteen vessels lightened a portion of their cargoes in 1896, against six in 1895, 19 in 1894, 34 in 1893, 25 in 1892, and 44 in 1891. Three hundred and thirty-five vessels discharged the whole of their cargoes at Kingston in 1896, against 169 in 1895, 188 in 1894, 369 in 1893, 220 in 1892, and 293 in 1891.

The quantity of grain transhipped at Port Colborne in 1897 and the four previous years is given below.

The total number of grain laden vessels lightened at this port in 1897 was 147 against 238 the previous year.

The quantity of grain lightened was as follows :—

Articles.	1893.	1894.	1895.	1896.	1897.
	Bush.	Bush.	Bush.	Bush.	Bush.
Wheat.....	47,558	104,827	322,662	660,190	642,927
Corn.....	759,000	260,657	870,705	908,833	697,508
Rye.....	11,540	Nil	Nil	8,197	Nil
Oats.....	35,353	63,412	71,648	79,585	12,527
Barley.....			21,003	6,377	5,119

WELLAND CANAL.

The total quantity of freight passed on the Welland Canal during the season of 1897 was 1,274,292 tons ; of this quantity 29,542 tons were way or local freight.  
There were 1,050,093 tons of freight passed eastwards, and 224,199 tons passed westwards.

*East and west bound through freight.*

The total quantity of freight passed through the whole length of the Welland Canal during the season of 1897 was 1,244,750 tons.  
Of this quantity 1,026,458 tons were east bound and 218,292 west bound freight.  
Of the east bound freight Canadian vessels carried 338,519 tons and United States vessels carried 687,939 tons ; and of the west bound freight Canadian vessels carried 7,458 tons, and United States vessels carried 210,834 tons, or a total of 345,977 tons for Canadian and 898,773 tons for American vessels.

ST. LAWRENCE CANALS.

The total quantity of freight passed through these canals during 1897 was 1,231,365 tons, of this quantity 1,043,204 tons passed eastward and 188,161 tons passed westward.

*East and west bound through freight.*

The total quantity of through freight was 837,469 tons ; of this quantity 813,638 tons were east bound and 23,831 tons were west bound.

*Way freight.*

Of the total quantity of (way) or local freight 229,566 tons were east bound and 164,330 tons west bound freight.



## Department of Railways and Canals.

### THROUGH TRAFFIC BETWEEN MONTREAL AND PORTS ON LAKE ERIE, MICHIGAN, ETC.

The total quantity of through freights passed eastward and westward through the Welland and St. Lawrence Canals, from Lake Erie to Montreal, during fifteen years, is as follows :—

	Eastward, to Montreal. Tons.	Westward. from Montreal. Tons.
1883.....	205,394	27,488
1884.....	168,715	9,425
1885.....	132,968	16,115
1886.....	244,514	16,801
1887.....	213,834	14,075
1888.....	183,899	19,310
1889.....	298,197	25,370
1890.....	231,746	31,951
1891.....	309,593	14,060
1892.....	263,144	9,452
1893.....	508,016	16,545
1894.....	292,191	9,439
1895.....	266,659	10,555
1896.....	480,077	10,050
1897.....	584,246	4,542

### FREIGHT FROM UNITED STATES PORTS TO UNITED STATES PORTS.

The total quantity of freight passed eastward and westward through the Welland Canal, from United States ports to United States ports, for a period of fifteen years, is as follows :—

	Eastward. Tons.	Westward. Tons.	Total. Tons.
1883.....	174,912	257,699	432,611
1884.....	163,998	243,081	407,079
1885.....	168,212	216,297	384,509
1886.....	224,916	239,562	464,478
1887.....	189,427	151,074	340,501
1888.....	221,062	213,689	434,751
1889.....	297,353	266,231	563,584
1890.....	318,259	215,698	533,957
1891.....	306,257	247,543	553,800
1892.....	300,733	240,332	541,065
1893.....	384,559	247,108	631,667
1894.....	361,319	230,948	592,267
1895.....	255,259	214,520	469,779
1896.....	385,695	267,518	653,213
1897.....	353,863	210,831	564,694

The total quantity of freight passed through the Welland Canal from United States ports to United States ports shows a decrease of 88,519 tons as compared with the previous year ; and an increase of 132,083 tons as compared with 1883.

The following statement shows the aggregate number of vessels, and the total quantity of freight passed through the Welland Canal, and the quantity passed between United States ports during the years 1867 to 1897 inclusive :

Fiscal Year.	Aggregate number of Vessels.	Total quantity trans- ported on the Welland Canal.	Quantity passed from United States ports to United States ports.
	No.	Tons.	Tons.
1867 .....	5,405	933,260	458,386
1868 .....	6,157	1,161,821	641,711
1869 .....	6,069	1,231,903	688,700
1870 .....	7,356	1,311,956	747,567
1871 .....	7,729	1,478,122	772,756
<i>Season of Navigation.</i>			
1872 .....	6,063	1,333,104	606,627
1873 .....	6,425	1,506,484	656,208
1874 .....	5,814	1,389,173	748,557
1875 .....	4,242	1,038,050	477,809
1876 .....	4,789	1,099,810	488,815
1877 .....	5,129	1,175,398	493,841
1878 .....	4,429	968,758	373,738
1879 .....	3,960	865,664	284,043
1880 .....	4,104	819,934	179,605
1881 .....	3,332	686,506	194,173
1882 .....	3,334	790,643	282,806
1883 .....	3,267	1,005,156	432,611
1884 .....	3,138	837,811	407,079
1885 .....	2,738	784,928	384,509
1886 .....	3,589	980,135	464,478
1887 .....	2,785	777,918	340,501
1888 .....	2,647	878,800	434,753
1889 .....	2,975	1,085,273	553,584
1890 .....	2,883	1,016,165	533,957
1891 .....	2,594	975,013	553,800
1892 .....	2,615	955,554	541,065
1893 .....	2,843	1,294,823	631,667
1894 .....	2,412	1,008,221	592,267
1895 .....	2,222	869,595	469,779
1896 .....	2,766	1,279,987	653,213
1897 .....	2,725	1,274,292	564,694

The total quantity of freight passed through the several divisions of the canals during the season of 1897 is as follows :—

	Farm Stock.	Forest, Produce of Wood.	Manufac- tures.	Merchan- dise.	Agricultural Products.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Welland .....	49	181,817	41,943	225,998	824,485	1,274,292
St. Lawrence .....	1,066	94,496	57,646	331,620	746,537	1,231,365
Chambly .....	405	237,653	11,363	95,860	6,855	352,136
Ottawa .....	1,220	551,790	333	4,600	4,427	562,370
Rideau .....	20	47,010	3,450	24,599	2,197	77,276
St. Peter's .....	22	6,248	1,926	50,013	8,884	67,093
Murray .....	23	2,404	2,999	5,467	2,338	13,231
Trent Valley .....	123	35,294	510	104	110	36,141

The total quantity of freight moved on the Welland Canal was 1,274,292 tons, of which 824,485 tons were agricultural products.

On the St. Lawrence Canals the total quantity of freight moved was 1,231,365 tons, of which 741,850 were agricultural products, and 331,620 tons were merchandise.

Department of Railways and Canals.

On the Ottawa Canals the total quantity of freight moved was 562,370 tons, of this quantity 551,790 tons were the produce of the forest.

STATISTICAL COMPARSION OF VARIOUS UNITED STATES ROUTES.

The statistical comparisons heretofore given in respect to the quantities of the principal articles carried through the Welland Canal, and those carried over routes in the United States, in competition with that work, have been continued to date.

By reference to statement H, as to the quantity of vegetable food carried to tide-water, it will be observed that the quantity carried by the New York Canals was 744,-575 tons in 1897, 957,182 tons in 1896, 602,505 in 1895, 1,400,129 in 1894, 1,452,563 in 1893, 937,999 in 1892, and 1,092,355 in 1891.

The quantities of vegetable food carried by the New York Central, Erie and New York, West Shore and Buffalo Railways being :—

	Tons.		Tons.
In 1897.....	5,673,638	In 1887.....	*3,847,766
1896.....	5,183,540	1886.....	*3,802,262
1895.....	3,798,574	1885.....	4,105,594
1894.....	4,281,056	1884.....	3,639,805
1893.....	5,107,426	1883.....	4,422,461
1892.....*	5,913,013	1882.....	3,888,557
1891.....	3,565,381	1880.....	4,732,385
1890.....	4,336,199	1869.....	1,087,809
1889.....	3,654,984		
1888.....	3,197,634		

\* Flour and grain only.

The following figures are an abstract of the quantities of vegetable food carried to tide-water by the canals and railways of the state of New York during twenty-nine years :—

	Canals.	Railways.	Total.	Proportions by Canals.
	Tons.	Tons.	Tons.	Tons.
1869.....	1,302,613	1,087,809	2,390,342	·545
1870.....	1,295,010	1,766,457	3,061,467	·423
1871.....	1,850,198	2,205,589	4,055,787	·456
1872.....	1,674,320	1,870,614	3,544,934	·472
1873.....	1,745,171	2,036,992	3,782,163	·461
1874.....	1,767,598	2,791,517	4,559,115	·387
1875.....	1,305,550	2,343,241	3,648,791	·357
1876.....	1,064,293	2,875,803	3,940,096	·270
1877.....	1,498,984	2,493,683	3,992,667	·375
1878.....	1,912,734	3,695,764	5,608,498	·341
1879.....	1,833,399	4,353,617	6,187,016	·296
1880.....	2,371,090	4,732,385	7,103,475	·333
1881.....	1,116,561	4,983,722	6,100,283	·183
1882.....	1,118,776	3,885,557	5,004,333	·223
1883.....	1,379,000	4,422,461	5,801,461	·237
1884.....	1,236,986	3,639,805	4,876,791	·253
1885.....	1,063,310	4,105,594	5,168,904	·205
1886.....	1,489,886	3,802,262	5,292,148	·281
1887.....	1,539,403	3,847,766	5,387,169	·285
1888.....	1,166,958	3,197,734	4,364,692	·267
1889.....	1,296,896	3,654,984	4,951,880	·262
1890.....	1,167,901	4,336,199	5,504,100	·212
1891.....	1,092,355	3,565,381	4,657,736	·234
1892.....	937,999	5,913,013	6,851,012	·137
1893.....	1,452,563	5,107,426	6,599,989	·284
1894.....	1,400,129	4,281,056	5,681,185	·327
1895.....	602,505	3,798,574	4,401,079	·159
1896.....	957,182	5,183,540	6,140,722	·156
1897.....	744,575	5,673,638	6,418,213	·116



COMPARATIVE STATEMENT OF TRAFFIC BY RAILWAYS AND CANALS VIA THE STATE  
OF NEW YORK.

On reference to the returns made by the railways to the state authorities of New York, and to the canal statistics submitted to the state legislature, I find that of the total tonnage of freight carried by the canals and railways, the state canals carried :—

	Per cent.		Per cent.
In 1859.....	68·9	In 1883 .....	18·7
1869.....	47·0	1884.....	19·0
1879.....	38·9	1885.....	17·1
1871.....	38·9	1886.....	16·9
1872.....	40·1	1887.....	16·3
1873.....	34·9	1888.....	18·8
1874.....	31·7	1889.....	15·1
1875.....	28·4	1890.....	13·9
1876.....	24·6	1891.....	13·4
1877.....	28·3	1892.....	9·8
1878.....	27·1	1893.....	10·1
1879.....	23·7	1894.....	10·2
1880.....	25·1	1895.....	9·7
1881.....	18·5	1896.....	8·5
1882.....	19·0	1897.....	8·3

The quantity of freight carried by the canals and railways was less in 1897 by 44,539 tons than the quantity carried in 1896, and an increase of 31,258,338 tons over 1869.

The quantities carried were as follows :—

	Total Tonnage.	Proportion by Canals.
In 1859 .....	5,485,076	·6890
1869 .....	12,453,174	·4705
1870 .....	15,148,274	·3895
1871 .....	15,844,152	·3896
1872 .....	16,631,609	·4012
1873 .....	18,200,208	·3497
1874 .....	18,283,547	·3174
1875 .....	17,101,758	·2841
1876 .....	16,948,627	·2462
1877 .....	17,489,770	·2833
1878 .....	19,017,301	·2719
1879 .....	22,590,766	·2373
1880 .....	25,706,586	·2512
1881 .....	27,857,394	·1859
1882 .....	28,693,054	·1905
1883 .....	30,167,119	·1877
1884 .....	26,293,844	·1905
1885 .....	27,543,948	·1718
1886 .....	31,168,744	·1698
1887 .....	34,029,791	·1632
1888 .....	26,244,610	·1883
1889 .....	35,466,042	·1514
1890 .....	37,624,199	·1394
1891 .....	38,524,179	·1343
1892 .....	43,618,569	·0982
1893 .....	42,953,233	·1009
1894 .....	37,916,412	·1024
1895 .....	36,170,339	·0967
1896 .....	43,756,051	·0849
1897 .....	43,711,512	·0828

## Department of Railways and Canals.

Average freight rates, grain, Chicago to Buffalo :—(as reported by the Secretary of Merchants' Exchange, Buffalo).

Year.	Wheat.	Year.	Wheat.
1878 .....	3·1	1889 .....	2·5
1879 .....	4·7	1890 .....	1·9
1880 .....	5·7	1891 .....	2·5
1881 .....	3·2	1892 .....	2·2
1882 .....	2·5	1893 .....	1·6
1883 .....	3·5	1894 .....	1·2
1884 .....	2·1	1895 .....	1·9
1885 .....	2·0	1896 .....	1·7
1886 .....	3·6	1897 .....	1·5
1887 .....	4·1		
1888 .....	2·7	Average twenty years.	2·7

COMPARATIVE STATEMENT of the Commerce through the United States, St. Mary's Falls Canal, and Canadian Sault Ste. Marie Canal, for the Seasons of 1896 and 1897.

	TRAFFIC FOR 1897.		TOTAL TRAFFIC FOR		INCREASE.	DECREASE.
	United States Canal.	Canadian Canal.	Season of 1897.	Season of 1896.	Amount.	Amount.
Vessels.....	12,812	4,268	17,080	18,577	.....	1,497
Lockages.....	5,967	2,604	8,571	9,665	.....	1,094
Tonnage registered.....	13,823,886	3,797,482	17,621,318	17,292,144	329,174	.....
Tonnage freight.....	14,039,626	4,947,063	18,986,689	17,256,423	1,730,266	.....
Passengers.....	28,705	11,745	40,450	37,096	3,354	.....
Coal (hard).....	435,994	98,732	534,726	435,838	98,888	.....
Coal (soft).....	2,119,502	387,547	2,507,049	2,592,525	.....	85,476
Flour.....	7,814,745	1,093,456	8,908,201	8,870,882	37,319	.....
Wheat.....	38,006,977	17,924,802	55,931,779	63,463,876	.....	7,532,097
Grain (excluding wheat).....	21,714,731	3,253,405	24,968,136	27,715,265	.....	2,747,129
Manufactured and pig iron.....	118,161	18,542	136,703	129,871	6,832	.....
Salt.....	269,189	20,825	290,014	243,875	46,139	.....
Copper.....	117,360	12,717	130,077	117,697	12,380	.....
Iron ore.....	7,048,586	3,572,854	10,621,440	7,895,071	2,726,369	.....
Lumber.....	794,441,000	7,799,156	802,240,156	688,873,800	113,366,356	.....
Silver ore.....	5	.....	5	240	.....	235
Building stone.....	6,189	2,073	8,262	17,731	.....	9,469
+ Unclassified freight.....	483,854	104,470	588,324	520,066	68,258	.....

+ Included in unclassified freight for,—

	1896.	1897.	Tons.
Wool.....	.....	.....	2,905
Hides.....	.....	.....	.....



## Department of Railways and Canals.

The United States canal was open to navigation during the season of—

1889	234 days.
1890	228 do
1891	225 do
1892	233 do
1893	219 do
1894	234 do
1895	231 do
1896	232 do
1897	234 do

The Canadian canal was open to navigation during the season of—

1895	87 days
1896	218 do
1897	238 do

The average number of vessels passing per day through the two canals for the whole season of 1897 was over seventy-three.

R. DEVLIN,  
*Compiler of Canal Statistics.*

OTTAWA, Oct. 16, 1898.

EXPORTS by Lake from the port of Chicago during 1897. (From Report of Board of Trade, Chicago.)

Commodities.	Quantity.	Value.
		\$ cts.
Wheat .....	Bush. 939,156	856,442 00
Corn. ....	" 6,530,398	1,835,540 00
Oats.....	" 757,087	185,604 00
Flaxseed.....	" 61,193	47,899 00
Flour .....	Bbls. 150	625 00
Corn meal.....	" 450	5,312 00
Glucose.....	" 1,305	12,360 00
Starch .....	" 150	400 00
Gluten meal.....	Sacks. 14,912	15,357 00
Sugar. ....	" 15,500	20,580 00
Steel billets, rods, &c.....	Tons. 9,038	139,351 00
Steel plates.....	" 832	8,725 00
Steel rails .....	" 7,717	158,343 00
Spikes and bolts .....	" 75	2,294 00
Pig iron .....	" 2,282	19,714 06
Total value .....	...	3,308,546 00

SHIPMENTS of Grain (in Transit and Export) by Lake from Chicago during 1897.  
(From Report of Board of Trade, Chicago.)

	CORN, BUSHEL.			OATS, BUSHEL.		WHEAT, BUSH.	RYE, BUSH.	TOTALS.
	Transit.	Export.	Totals.	Transit.	Export.	Export.	Export.	
Collingwood, Ont.....	213,982		213,982					213,982
Kingston, Ont.....		1,951,908	1,951,908			632,471		2,584,379
Midland, Ont.....	1,731,800	82,542	1,814,342		147,200			1,961,542
Owen Sound, Ont.....	345,952	819,140	1,165,092		145,187			1,310,279
Prescott, Ont *.....		3,620,808	3,620,808		464,700	306,685		4,392,193
Point Edward, Ont....	164,000		164,000	155,000				319,000
Sarnia, Ont.....	964,376		964,376	1,274,741				2,239,117
Walkerville, Ont.....		56,000	56,000					56,000
Totals .....	3,420,110	6,530,398	9,950,508	1,429,741	757,087	939,156		13,076,492

\* 61,193 bushels of flaxseed were shipped for export.

Department of Railways and Canals.

GRAIN FREIGHTS BY LAKE, SEASON OF 1897.

The following were the current rates of freight on wheat and corn from Chicago to Buffalo, Kingston, Ogdensburg and Montreal (steam), also to New York by Lake and Erie Canal; for each week during the season of Navigation. (From Report of Board of Trade, Chicago.)

1897.	To Buffalo.		To Ogdensburg.		To Kingston.		To Montreal. (Steam.)		Erie Canal, Buffalo to New York.		Chicago to New York, Lake and Canal, including Buffalo Charges.	
	Wheat per Bush.	Corn per Bush.	Corn per Bush.	Wheat per Bush.	Corn per Bush.	Wheat per Bush.	Corn per Bush.	Wheat per Bush.	Corn per Bush.	Wheat per Bush.	Corn per Bush.	
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	
April 17.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 24.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
May 1.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 8.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 15.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 22.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 29.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
June 5.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 12.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 19.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 26.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
July 3.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 10.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 17.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 24.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 31.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
Aug. 7.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 14.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 21.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 28.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
Sept. 4.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 11.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 18.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 25.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
Oct. 2.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 9.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 16.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 23.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 30.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
Nov. 6.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 13.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 20.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 27.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
Dec. 4.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 11.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	
do 18.....	1 1/2	1 1/2	2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	



LAKE FREIGHTS FROM CHICAGO TO BUFFALO ON WHEAT AND CORN.

Statement showing the dates of the changes of the ruling rates of lake freights on wheat and corn from Chicago to Buffalo, during 1897 (as reported by the Secretary of of Merchants Exchange, Buffalo.)

1897.			1897.		
Wheat, bush.			Wheat, bush.		
Corn, bush.			Corn, bush.		
Opening.	Cts.	Cts.	Opening.	Cts.	Cts.
April 15		1 <sup>3</sup> / <sub>8</sub>	Aug. 14		1 <sup>1</sup> / <sub>2</sub>
do 20		1 <sup>1</sup> / <sub>4</sub>	do 16		1 <sup>1</sup> / <sub>4</sub>
do 22	1 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	do 18	1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>
do 23	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	do 24	1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>
May 1	1 <sup>1</sup> / <sub>4</sub> to 1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>8</sub>	do 26	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>
do 6	1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	do 27	1 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>4</sub>
do 14	1 <sup>1</sup> / <sub>4</sub> to 1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub> to 1 <sup>1</sup> / <sub>4</sub>	do 30	2 <sup>1</sup> / <sub>4</sub>	2
do 15	1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	Sept. 4		1 <sup>7</sup> / <sub>8</sub>
do 25		1 <sup>1</sup> / <sub>4</sub> to 1 <sup>1</sup> / <sub>2</sub>	do 8		1 <sup>1</sup> / <sub>4</sub>
do 26	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	do 9	2	1 <sup>1</sup> / <sub>4</sub>
June 3		1 <sup>1</sup> / <sub>4</sub>	do 10		2
do 4	1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	do 13	1 <sup>7</sup> / <sub>8</sub> to 2	1 <sup>3</sup> / <sub>4</sub>
do 5		1 <sup>3</sup> / <sub>8</sub>	do 18	2	1 <sup>3</sup> / <sub>4</sub>
do 10		1	Oct. 1	1 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>4</sub>
do 12		1 to 1 <sup>1</sup> / <sub>2</sub>	do 16		1 <sup>1</sup> / <sub>4</sub>
do 16		1	do 25		1 <sup>1</sup> / <sub>4</sub>
do 23		1 <sup>1</sup> / <sub>8</sub>	do 27		1 <sup>1</sup> / <sub>2</sub>
do 26		1 <sup>1</sup> / <sub>4</sub>	do 29		1 <sup>1</sup> / <sub>2</sub>
do 30		1 <sup>3</sup> / <sub>8</sub>	Nov. 1		1 <sup>3</sup> / <sub>4</sub>
July 2		1	do 2		1 <sup>1</sup> / <sub>4</sub>
do 9		1 <sup>1</sup> / <sub>2</sub>	do 3	1 <sup>1</sup> / <sub>8</sub>	1
do 10	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	do 10		1 <sup>1</sup> / <sub>8</sub>
do 12		1 <sup>1</sup> / <sub>4</sub>	do 11		1 to 1 <sup>1</sup> / <sub>8</sub>
do 19	1 <sup>3</sup> / <sub>8</sub> to 1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	do 12		1
do 27	1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	do 13		1 <sup>1</sup> / <sub>4</sub>
do 28		1 <sup>3</sup> / <sub>8</sub>	do 16		1 <sup>3</sup> / <sub>4</sub>
Aug. 3	1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	do 27		1 <sup>3</sup> / <sub>4</sub> to 1 <sup>3</sup> / <sub>2</sub>
do 5	1 <sup>1</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>8</sub>	do 29		2
do 10			do 30		2 <sup>1</sup> / <sub>4</sub>
do 11	1 <sup>5</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	Dec. 1 to close		2 <sup>1</sup> / <sub>2</sub>
do 12	1 <sup>1</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>8</sub>			

Highest, on oats 1 <sup>3</sup>/<sub>4</sub>, lowest, <sup>1</sup>/<sub>8</sub>c. per bushel.  
NOTE.—Corn from Chicago to Kingston ranged from 1 <sup>1</sup>/<sub>8</sub> to 4c., and wheat from 3 <sup>1</sup>/<sub>4</sub> to 3 <sup>1</sup>/<sub>2</sub>c, per bushel during the season.  
Corn to Port Huron, 1 to 1 <sup>1</sup>/<sub>2</sub>c., and oats 1c., per bushel.  
Oats to Sandusky, 1 <sup>1</sup>/<sub>2</sub>c., per bushel.  
Rates from Milwaukee, about the same as from Chicago.

# Department of Railways and Canals.

## AVERAGE LAKE FREIGHTS.

The following statement shows the average rates of lake freights on wheat and corn between Chicago and Buffalo during each month in the past ten years, the highest and lowest rate on wheat in each year, and the average rate on wheat each year in cents, per bushel :—

*(Per Report of the Secretary of Merchants' Exchange, Buffalo.)*

		May.	June.	July.	August.	Sept.	Oct.	Nov.
Grain bushel.		Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
1888	{ Wheat.....	2·1	1·9	2·2	3·2	3·5	2·4	2·5
	{ Corn.....	1·8	1·7	1·9	2·9	3·2	2·1	2·3
Highest rate, wheat, 1888, 4c. ; lowest, 2c. ; average for season, 2·7c.								
1889	{ Wheat.....	2·2	2·0	2·1	2·7	3·0	3·0	2·5
	{ Corn.....	2·0	1·8	1·9	2·4	2·7	2·7	2·3
Highest rate, wheat, 1889, 3·6c. , lowest, 2c. ; average for the season, 2·5c.								
1890	{ Wheat.....	1·8	2·2	2·3	1·5	2·0	1·8	2·0
	{ Corn.....	1·6	2·0	2·0	1·3	1·8	1·6	1·8
Highest rate, wheat, 1890, 2½c. ; lowest, 1·5c. ; average for the season, 1·9c.								
1891	{ Wheat.....	1·4	1·2	2·1	2·7	3·3	2·2	4·1
	{ Corn.....	1·2	1·1	2·0	2·5	3·0	2·1	3·8
Highest rate, wheat, 1891, 5¼c. ; lowest, 1c. ; average for the season, 2·4c.								
1892	{ Wheat.....	1·9	1·8	2·0	2·3	2·3	2·3	2·6
	{ Corn.....	1·7	1·6	1·8	2·1	2·1	2·1	2·3
Highest rate, wheat, 1892, 3c. ; lowest, 1c. ; average for the season, 2·2c.								
1893	{ Wheat.....	1·3	1·8	1·2	1·3	1·7	2·1	2·0
	{ Corn.....	1·2	1·6	1·1	1·2	1·5	1·9	1·8
Highest rate, wheat, 1893, 2¾c. ; lowest, 1c. ; average for the season, 1·6c.								
1894	{ Wheat.....	1·4	1·2	0·9	1·0	1·4	1·1	1·3
	{ Corn.....	1·2	1·1	0·9	0·9	1·3	1·0	1·3
Highest rate, wheat, 1894, 3c. ; lowest ¾c. ; average for the season, 1·2.								
1895	{ Wheat.....	1·2	1·2	1·1	1·6	2·1	3·0	3·0
	{ Corn.....	1·1	1·1	1·0	1·4	1·9	2·9	2·7
Highest rate, wheat, 1895, 3c. ; lowest, 1c. ; average for the season, 1·9c.								
1896	{ Wheat.....	1·6	1·5	1·2	1·3	1·4	2·0	2·1
	{ Corn.....	1·4	1·3	1·1	1·2	1·2	1·9	1·9
Highest rate, wheat, 1896, 2½c. ; lowest, 1¼c. ; average for the season, 1·7c.								
1897	{ Wheat.....	1·3	1·2	1·3	1·5	2·0	1·8	1·5
	{ Corn.....	1·2	1·1	1·2	1·4	1·8	1·7	1·4
Highest rate, wheat, 1887, 2½c. ; lowest, 1c. ; average for the season, 1·5c.								

LAKE FREIGHTS FROM DULUTH TO BUFFALO ON WHEAT (AS REPORTED BY THE SEC. OF THE MERCHANTS EXCHANGE, BUFFALO, N. Y.

The following statement shows the Lake Freight rates on Wheat from Duluth to Buffalo, during the season of 1897.

1897.	Wheat, Bushels.	1897.	Wheat, Bushels.
	Cts.		c.
April 24.....	1 $\frac{1}{2}$	Aug. 4.....	1 $\frac{3}{4}$
May 1.....	1 $\frac{1}{2}$	do 12.....	1 $\frac{1}{2}$
do 12.....	1 $\frac{3}{4}$	do 18.....	1 $\frac{1}{2}$
do 17.....	1 $\frac{1}{2}$	do 24.....	1 $\frac{1}{2}$
do 23.....	1 $\frac{3}{4}$	do 28.....	1 $\frac{3}{4}$
June 11.....	1 $\frac{5}{8}$ to 1 $\frac{1}{2}$	Sept. 2.....	2 $\frac{1}{4}$
do 16.....	1 $\frac{1}{2}$	do 7.....	2 $\frac{1}{2}$
July 13.....	1 $\frac{1}{4}$	do 13.....	2 $\frac{1}{4}$
do 19.....	1	Oct. 7.....	2 $\frac{1}{8}$
Aug. 2.....	1 $\frac{1}{4}$	do 11 to close.....	2

In 1885, the range of freights on wheat, Duluth to Buffalo, was 1 $\frac{1}{2}$  to 5c. ; in 1886, 3 $\frac{1}{4}$  to 8c. ; in 1887, 5 to 8c. ; in 1888, 2 to 5c. ; in 1889, 2 to 5c. ; in 1890, 2 to 5c. ; in 1891, 1 $\frac{1}{4}$  to 9 $\frac{1}{2}$ c. ; in 1892, 2 $\frac{1}{4}$  to 4c. ; in 1893, 1 $\frac{1}{4}$  to 3 $\frac{1}{2}$ c. ; in 1894, 1 $\frac{1}{4}$  to 3c. ; in 1895, 2 to 6c. ; in 1896, 1 $\frac{1}{4}$  to 3c. ; in 1897, 1 to 2 $\frac{1}{2}$ c. per bushel.

The first departure by lake, at Duluth, in 1896, was on April 22nd, and in 1895 on April 27th. In 1894, season opened on April 19th ; in 1893, on May 8th ; in 1892, on April 21st ; in 1891, on April 30th ; in 1890, on March 26th ; in 1889, on April 20th ; in 1888, on May 12th ; in 1887, on May 4th ; in 1886, on May 7th.

Wheat was shipped at Kingston, Canada, per bushel, during the season of 1887, at 6 $\frac{1}{4}$  to 7 $\frac{3}{4}$ c. ; in 1888, at 4 to 5c. ; in 1889, at — ; in 1890, 5 $\frac{3}{4}$ , 5 $\frac{1}{2}$ , 4 $\frac{1}{2}$ , 4 $\frac{1}{4}$ , 4c. ; in 1891, during May, 3 $\frac{3}{4}$ , 3 $\frac{1}{2}$ , 2 $\frac{1}{2}$ c. ; during June, 3c. ; and on July 25th, 2 $\frac{1}{2}$ c. ; in 1892, 5c. in April ; 5 to 5 $\frac{1}{4}$ c. in May ; 4c. in June ; 4 $\frac{1}{2}$ c. in July ; 3c. in August ; 6 to 6 $\frac{1}{4}$ c. in October ; in 1893, ranged from 5 $\frac{1}{2}$  to 4 $\frac{1}{2}$ c. in April : 4 $\frac{1}{2}$  to 4 $\frac{3}{4}$ c. in May ; 4 to 3 $\frac{1}{2}$ c. in June : 2 $\frac{3}{4}$  to 3c. in July : 3 $\frac{1}{2}$  to 3 $\frac{3}{4}$ c. in September ; no figures quoted after that date. In 1894, ranged from 3 $\frac{1}{4}$  to 3 $\frac{1}{2}$ c. in May : 3 $\frac{1}{2}$ c. in June : 2 $\frac{1}{2}$ c. in July ; 2 $\frac{1}{2}$  to 3 $\frac{1}{4}$ c. in August ; 4c. in September ; and 4 $\frac{1}{4}$ c. in October. On August 25th and November 3rd, 1894, wheat to Ogdensburgh at 3 $\frac{1}{4}$ c. and 4 $\frac{1}{2}$ c. respectively. In 1895, wheat to Kingston from 3c to 5c. In 1896, wheat to Kingston from 3c. to 5 $\frac{1}{2}$ c. ; and in 1897, wheat to Kingsth 3c. to 3 $\frac{1}{8}$ , according to time of year.

LAKE FREIGHTS FROM TOLEDO TO BUFFALO ON WHEAT.

The following statement shows the ruling rates of Lake Freights, on wheat from Toledo to Buffalo, during the season of 1897, on the dates specified, as reported by the Secretary Merchants Exchange Buffalo.

Date, 1897.	Wheat. Bush.	Date, 1897.	Wheat. Bush.
	Cts.		Cts.
Opening to August 29th.....	1	August 30th to close of season.....	1 $\frac{1}{4}$



## Department of Railways and Canals.

The range for 1886 was  $1\frac{3}{4}$  to 3c.; for 1887,  $2\frac{1}{4}$  to 3c.; for 1888,  $1\frac{1}{2}$  to  $2\frac{1}{8}$ c.; for 1889,  $1\frac{3}{4}$  to 2c.; for 1890,  $1\frac{1}{2}$  to 2c.; for 1891, 1 to 3c.; for 1892,  $1\frac{1}{2}$  to  $2\frac{1}{2}$ c.; for 1893, 1 to 2c.; for 1894, 1 to 2c.; for 1895, 1 to  $2\frac{1}{4}$ c.; for 1896,  $1\frac{1}{4}$  to  $1\frac{3}{4}$ c., and for 1897, 1 to  $1\frac{1}{4}$ c. per bushel.

From Toledo to Ogdensburg, wheat and corn shipped, at 6 to 7c. in 1887; at  $4\frac{1}{2}$  to 6c. for wheat and 5c. for corn in 1888; and 5c. to  $5\frac{7}{8}$ c. for wheat in 1889 per bushel. From Toledo, on October 8th, 1887, corn shipped to Kingston at  $3\frac{1}{2}$ c. and on November 12th, at  $4\frac{1}{2}$ c. per bushel. In 1888, corn Toledo to Kingston at  $4\frac{1}{2}$ c. to 3c.; and wheat at  $3\frac{1}{2}$  to 3c. per bushel. In 1889, wheat Toledo to Kingston, 3c.; and in 1891, rye Toledo to Kingston at 3c. per bushel. From Toledo, on June 2nd, 1887, wheat shipped to Montreal by propeller at  $6\frac{1}{2}$ c.; on June 14th, corn at same price; but on September 26th the rate on corn was only 5c. per bushel. In 1888, corn Toledo to Montreal, at 6 to  $5\frac{3}{4}$ c. and wheat at  $5\frac{1}{2}$ c. per bushel. From 1889 to 1897, no shipments to Montreal or other places in Canada reports.

### CANAL FREIGHTS FROM BUFFALO TO NEW YORK.

The following shows the changes in the ruling rates of freight to New York from Buffalo, on the days specified in 1897 (as reported by the Secretary, Merchants Exchange, Buffalo).

Date, 1897.	Wheat. Bush.	Corn. Bush.	Date, 1897.	Wheat. Bush.	Corn. Bush.
	Cts.	Cts.		Cts.	Cts.
Opening .....	$3\frac{3}{8}$	$2\frac{7}{8}$	July 15th .....	$2\frac{1}{2}$	$2\frac{1}{8}$
May 8th .....	3	$2\frac{1}{2}$	August 27th .....	$2\frac{7}{8}$	$2\frac{1}{2}$
" 17th .....	3 to $2\frac{1}{2}$	$2\frac{1}{2}$ to $2\frac{1}{8}$	" 28th .....	3	$2\frac{3}{4}$
" 18th .....	$2\frac{1}{2}$	$2\frac{1}{8}$	Sept. 3rd .....	$3\frac{1}{2}$	3
" 25th .....	$2\frac{1}{4}$	$1\frac{7}{8}$	" 15th .....	$3\frac{5}{8}$	$2\frac{7}{8}$
June 5th .....	2	$1\frac{3}{4}$	" 20th .....	$3\frac{1}{4}$	$2\frac{3}{4}$
" 7th .....	$2\frac{1}{8}$	$1\frac{3}{4}$	Oct. 1st .....	3	$2\frac{1}{2}$
July 7th .....	$2\frac{1}{8}$ to $2\frac{1}{4}$	$1\frac{3}{4}$ to $1\frac{1}{2}$	" 25th to close .....	$3\frac{1}{2}$	3
" 8th .....	$2\frac{1}{4}$	$1\frac{1}{8}$			

The freight on oats varied from  $1\frac{3}{8}$  to  $2\frac{1}{8}$ c. per bushel.

Pine lumber per 1,000 feet, was carried from Buffalo and Tonawanda to New York as follows: Opened at \$2; changed May 11th to \$1.75 and continued at that rate to the close. Rates to Albany, 50c. per 1,000 feet, less than preceding figures.

AVERAGE CANAL FREIGHTS.

BUFFALO TO NEW YORK.

The following statement shows the average rates of canal freights on wheat and corn between Buffalo and New York during each month in the past ten years, and the highest and lowest rates on wheat and average rate on wheat in each :—

(Reported by Sec. Merchants Exchange Buffalo).

Grain.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
1888 { Wheat... ..	3·4	2·5	2·5	4·1	3·9	3·7	3·5
1888 { Corn... ..	3·1	2·3	2·3	3·8	3·6	3·4	3·2
Highest rate, wheat, 1888, 4·5c. ; lowest, 2c. ; average for the season, 3·4c.							
1889 { Wheat... ..	4·0	3·8	4·0	4·4	5·0	5·0	5·0
1889 { Corn... ..	3·6	3·4	3·6	3·9	4·5	4·5	4·4
Highest rate, wheat, 1889, 5c. ; lowest, 3·7c. ; average for the season, 4·8c.							
1890 { Wheat... ..	3·9	3·8	3·6	3·8	3·9	4·0	3·5
1890 { Corn... ..	3·5	3·4	3·2	3·4	3·5	3·6	3·1
Highest rate, wheat, 1890, 4·2c ; lowest, 3c. ; average for the season, 3·8c.							
1891 { Wheat... ..	2·8	2·9	2·8	3·8	4·2	4·6	4·0
1891 { Corn... ..	2·5	2·6	2·5	3·5	3·8	4·2	3·6
Highest rate, wheat, 1891, 3¾c. ; lowest, 2·5c. ; average for the season, 3·5c.							
1892 { Wheat... ..	2·7	2·2	2·4	3·0	3·8	4·7	4·6
1892 { Corn... ..	2·4	2·0	2·2	2·6	3·4	4·4	4·3
Highest rate, wheat, 1892, 6c. ; lowest, 2½c. ; average for the season, 3·5c.							
1893 { Wheat... ..	4·8	4·8	4·6	4·6	4·0	4·7	4·8
1893 { Corn... ..	4·4	4·4	4·3	4·2	3·6	4·3	4·5
Highest rate, wheat, 1893, 5c. ; lowest, 3·6c ; average for the season, 4·6c.							
1894 { Wheat... ..	3·1	2·9	3·3	3·4	3·6	2·9	3·0
1894 { Corn... ..	2·8	2·6	3·0	3·1	3·3	2·6	2·7
Highest rate, wheat, 1894, 4c. ; lowest, 2·6c. ; average for the season 3·2c.							
1895 { Wheat... ..	1·9	1·7	2·0	2·0	2·1	2·5	2·7
1895 { Corn... ..	1·7	1·5	1·7	1·7	2·0	2·2	2·5
Highest rate, wheat, 1895, 3c. ; lowest, 1·9c. ; average for the season, 2·2c.							
1896 { Wheat... ..	3·7	3·7	3·7	3·7	3·7	3·7	3·8
1896 { Corn... ..	3·5	3·5	3·5	3·5	3·5	3·5	3·6
Highest rate, wheat, 1896, 4c. ; lowest, 3·1c. ; average for the season, 3·7c.							
1897 { Wheat... ..	2·6	2·2	2·3	2·5	3·3	3·1	3·5
1897 { Corn... ..	2·2	1·8	2·0	2·2	2·8	2·6	3·0
Highest rate, wheat, 1897, 3·5c. ; lowest 2·1c. ; average for the season, 2·8c.							

NOTE.—Canal free of tolls since 1882.

# Department of Railways and Canals.

## FREIGHT, TOLLS, ELEVATING AND STORAGE RATES COMPARED.

The following statement shows the receipts of grain and flax-seed at Buffalo, the average canal freight on wheat, and the tolls on wheat to New York, and the elevating, and storage rates at Buffalo for a series of years (as reported by Secretary, Merchants' Exchange, Buffalo):

Year.	Grain received.	Average Canal Freight on Wheat.	Tolls on Wheat.	Elevating, including Storage.
	Bush.	Cts.	Cts.	Cts.
1870	32,208,039	11·2	3·1	1½
1871	61,319,313	12·6	3·1	1½
1872	58,703,666	13·0	3·1	1½
1873	65,498,955	11·4	3·1	1½
1874	55,660,198	10·0	3·1	1½
1875	52,833,451	7·9	2·0	1
1876	44,207,121	6·6	2·0	1
1877	61,822,292	7·4	1·0	1
1878	78,828,443	6·0	1·0	1
1879	75,089,768	6·8	1·0	1
1880	105,133,009	6·5	1·0	1
1881	56,389,827	4·7	1·0	1
1882	51,501,503	5·4	1·0	1
1883	65,722,080	4·9	None.	1
1884*	58,011,800	4·2	do	1
1885*	52,671,090	3·8	do	1
1886*	75,570,850	5·0	do	1
1887*	87,073,570	4·6	do	1
1888*	73,977,390	3·4	do	1
1889*	92,290,550	4·8	do	1
1890*	91,994,680	3·8	do	1
1891*	135,315,510	3·5	do	1
1892*	138,872,560	3·5	do	1
1893*	140,796,410	4·6	do	1
1894*	105,435,577	3·2	do	1
1895*	121,225,497	2·2	do	1
1896*	161,470,745	3·7	do	1
1897*	167,842,186	2·8	do	1

NOTE.—Prior to 1870 tolls 6·21 cents per bushel, and the elevating charge 2 cents per bush.

\* Including flax seed.



AVERAGE FREIGHT CHARGES PER BUSHEL.

For the transportation of wheat and corn from Chicago to New York for a series of years.

(From Report of Board of Trade, Chicago.)

	CORN.			WHEAT.		
	By lake and canal.	By lake and rail.	By all rail.	By lake and canal.	By lake and rail.	By all rail.
1858	127		3619	1550		3861
1859	1570		3248	1663		3480
1860	a 0833		3248	a 095		3480
1861	a 1062		3881	a 1210		4158
1862	a 0957		4480	a 1062		4800
1863	a 063		4592	a 072		4920
1864	a 09		5600	a 0952		60
1865	a 0864		4188	a 0894		4488
1866	a 1075		4312	a 1377		4620
1867	a 0511		4176	a 08		4475
1868	a 0604		3532	a 0802		3784
1869	a 0584	2355	3320	a 0651	2520	3557
1870	a 16	2220	28	a 0677	2250	30
1871	a 0754	2372	2968	a 0687	2542	3180
1872	a 1072	2660	3266	a 1110	2950	3499
1873	a 0816	2298	2893	a 0917	2461	3102
1874	a 0382	1388	2450	a 0400	1709	2625
1875	a 034	1303	2240	a 0378	1389	2400
1876	b 0875	1079	1574	b 0982	1136	1686
1877	b 0959	1406	1890	b 1109	1546	2050
1878	b 0883	1053	1652	b 0996	1209	1770
1879	b 1049	1220	1456	b 1187	1313	1774
1880	b 1341	1443	1748	b 1313	1580	1980
1881	b 0777	0942	1340	b 0867	1049	1440
1882	b 0672	1028	1350	b 0723	1091	1447
1883	b 0803	11	1512	b 0901	1163	1620
1884	b 0655	085	1232	b 07	10	1320
1885	b 063	0801	1232	b 0654	0902	1320
1886	b 0845	1120	14	b 0910	12	1500
1887	b 0850	1120	1470	b 0950	12	1575
1888	b 0671	1026	1354	b 0705	1114	1450
1889	b 0632	0819	126	b 0692	0897	1500
1890	b 0593	0732	1136	b 0676	0852	1430
1891	b 0632	0753	1400	b 0695	0857	1500
1892	b 0595	0721	1296	b 0645	0759	1380
1893	b 0718	0797	1365	b 0766	0848	1463
1894	b 0493	0650	1232	b 0511	0700	1320
1895	b 0450	0640	1029	b 0486	0696	1189
1896	b 0575	0615	1050	b 0619	0661	1200
1897	b 0453	0692	1143	b 0522	0742	1250

a To Buffalo only. b Including Buffalo charges and tolls.

# Department of Railways and Canals.

## FOREIGN FREIGHT RATES.

ANNUAL average Freight Rates on Grain, Flour and Provisions (per 100 lbs.) from Chicago to European Ports, by all Rail to Sea-board and thence by steamers.

Shipped to	Articles.	1897.	1896.	1895.	1894.	1893.
		%	%	%	%	%
Liverpool .....	Grain .....	3360	3350	3200	3250	3410
do .....	Sacked flour .....	3681	3430	3400	3316	3515
do .....	Provisions .....	4440	4491	4181	4406	4547
Glasgow .....	Grain .....	3523	3422	3419	3463	3585
do .....	Sacked flour .....	3906	3650	3625	3503	3625
do .....	Provisions .....	5250	4997	4969	4659	4828
London .....	Grain .....	3400	3348	3329	3288	3760
do .....	Sacked flour .....	3612	3528	3513	3493	3794
do .....	Provisions .....	4814	4715	4603	4575	4828
Antwerp .....	do .....	5109	4969	4828	4688	4828
Hamburg .....	do .....	5100	5100	5000	5000	5250
Amsterdam .....	do .....	5200	5200	5000	5000	5000
Rotterdam .....	do .....	5200	5200	4800	5000	5000
Copenhagen .....	do .....	5728	5812	5531	5531	5531
Stockholm .....	do .....	6853	6937	6656	6656	6656
Stettin .....	do .....	5728	5812	5531	5531	5531
Bordeaux .....	do .....	6413	6413	6413	6250	6000

LAKE FREIGHTS ON COAL FROM BUFFALO TO CHICAGO AND OTHER PORTS.

The following statement shows the ruling freight rates on coal per ton, in cents, from Buffalo to the Ports named, during the season of 1897, for the week ending on the dates specified.

1897. Week ending.	Chicago.	Milwaukee.	Duluth and Superior Ports.	Green Bay.	Gladstone.	Shebogan.	Toledo.	Detroit.	Racine.	Saginaw.	Bay City.	Washburn.	Ashland.
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
April 25.....	25	25	20							40			
May 1.....	25	25	20										
do 8.....	25	25	20										
do 15.....	25	25	20						25	35			
do 22.....	20	20	20	25					25	35			
do 29.....	20	20	20						25				
June 5.....	20	20	20							35			
do 12.....	20	20	20				20		25	35			
do 19.....	20	20	20			25			25				
do 26.....	20	20	20	25					25				
July 3.....	20	20	20				20		25	35			
do 10.....	20	20	20	25		25	20		25	40	25		
do 17.....	20	20	20	25	20		20		25	35	20		
do 24.....	20	20	20	25			20		25				
do 31.....	20	20	20	25	20		20			35	25	20	
Aug. 7.....	20	20	20	25			20	25	25		25		
do 14.....	20	20	20	25	20		20			35	25		
do 21.....	20	20	20	25			20		25		25	20	
do 28.....	20	20	20	25			20		25		25	20	
Sept. 4.....	20	20	20				20			35			
do 11.....	20	20	20	25	20		20	20					
do 18.....	20	20	20	25	20		20						
do 25.....	20	20	20	25	20		20	20					
Oct. 2.....	20 to 30	20 to 30	20	25			20						20
do 9.....	30 to 40	30 to 40	20 to 25	40			20						20
do 16.....	40	40	25	40			20	30					
do 23.....	40	40	25	40	25		25	30					
do 30.....	40	40	25	40	25		25	30				25	
Nov. 6.....	50	50	30	50	30		30		50		30		
do 13.....	50 to 60	50 to 60	30 to 60	50	60		30	30	70		35		
do 20.....	60	60	60		60		30						
do 27.....	60	60	60	60	60		30						
Dec. 3.....	60	60	60	60	60		30						
do 10.....	60	60	60	60	60		30						
do 17.....	60	60	60	60	60		30						

NOTE—All coal carried on the lakes is loaded and unloaded free of expense to the vessel.



# Department of Railways and Canals.

TOTAL VALUES of Merchandise Received from British North America for Immediate Transit across United States Territory, for Immediate Transshipment in Ports of the United States to British North America, and so shipped, during each year from 1873 to 1897 inclusive.

YEAR ENDING 30TH JUNE.	COUNTRIES FROM WHICH RECEIVED.					COUNTRIES TO WHICH SHIPPED.				
	British North America.					British North America.				
	Nova Scotia, New Brunswick, and Prince Edward Island.	Quebec, Ontario, Manitoba, and the Northwest Territories.	British Columbia.	Newfoundland and Labrador.	Total.	Nova Scotia, New Brunswick, and Prince Edward Island.	Quebec, Ontario, Manitoba, and the Northwest Territories.	British Columbia.	Newfoundland and Labrador.	Total.
1873	495,289	12,894,164	5,240		13,394,693	5,282,290	21,320,174	181,720		26,784,184
1874	449,655	13,616,344	97,691		14,163,690	7,150,036	19,843,169	317,534		27,310,739
1875	443,570	17,342,933	256,074		18,042,577	8,999,596	20,283,639	517,060		29,800,295
1876	261,443	22,134,275	195,047	1,137	22,591,902	9,102,600	14,658,358	658,836	94	24,419,888
1877	160,658	12,092,619	218,418		12,471,695	2,879,422	15,551,238	544,018	2,475	18,977,153
1878	163,978	11,627,114	412,966		12,204,058	951,268	11,436,470	524,013	934	12,912,685
1879	194,129	11,606,832	280,079	55	12,081,095	889,539	11,520,877	476,824	2,347	12,889,587
1880	215,131	16,782,315	137,271		17,134,717	1,643,716	14,866,663	531,436	288	17,042,103
1881	171,383	16,758,108	72,555		17,002,046	1,778,836	20,857,827	719,268	333	23,356,264
1882	164,990	28,265,083	113,018	87	28,543,178	2,732,665	34,005,845	855,784	1,190	37,595,484
1883	561,791	29,204,031	36,973	25	29,802,820	2,455,557	35,878,389	971,307	7,335	39,312,568
1884	656,233	12,574,953	188,041		13,419,227	1,740,900	19,717,466	1,475,833	5,186	22,939,385
1885	933,806	12,280,483	308,691	633	13,523,613	1,635,442	16,448,942	1,615,293	781	19,700,458
1886	1,165,973	9,303,864	359,104	32,079	10,861,020	2,040,298	16,369,429	1,825,178	6,174	20,241,079
1887	1,684,730	9,606,175	213,816		11,504,721	1,621,748	19,930,296	635,841	70	22,187,955
1888	1,525,048	6,417,701	372,934	27,134	8,542,817	1,781,028	13,459,169	370,322	1,137	13,611,656
1889	2,596,233	8,355,178	294,859	89,853	11,336,123	2,484,787	18,993,957	665,527	2,704	22,146,975
1890	3,070,657	12,449,772	306,897	174,584	16,001,910	5,277,210	21,140,198	913,106	4,690	27,335,204
1891	3,859,079	15,310,945	422,806	187,640	19,780,470	5,605,614	21,695,992	547,144	34,273	27,883,023
1892	4,393,062	19,005,704	201,373	328,116	23,928,255	2,079,783	24,189,181	428,188	6,962	26,704,114
1893	1,009,597	16,404,425	89,565	381,986	17,885,573	2,052,357	20,232,400	409,055	26,289	22,720,111
1894	1,070,676	15,649,881	348,069	273,467	17,342,093	1,831,417	17,880,688	463,471	6,640	20,182,216
1895	1,190,782	17,774,108	411,557	236,415	19,621,862	1,834,745	19,320,714	558,991	7,844	21,722,294
1896	1,118,185	18,038,931	582,469	404,020	20,143,605	1,572,783	19,441,279	772,586	1,768	21,788,416
1897	1,118,655	22,497,151	611,322	367,295	24,593,823	1,682,538	17,660,211	1,312,797	8,130	20,663,676

TOTAL VALUES of Merchandise received from the Principal and other Foreign Countries for Immediate Transit across United States Territory or for Immediate Transshipment in Ports of the United States to other foreign countries, and so shipped, for each Year from 1868 to 1897 inclusive.

Year ending June 30.	COUNTRIES FROM WHICH RECEIVED.						COUNTRIES TO WHICH SHIPPED.						Total Value of Merchandise received and shipped
	Great Britain and Ireland.	Germany.	British North American Possessions.	Mexico.	Cuba.	Other Countries.	Great Britain and Ireland.	Germany.	British North American Possessions.	Mexico.	Cuba.	Other Countries.	
£	£	£	£	£	£	£	£	£	£	£	£	£	£
1868	10,664,576	132,074	4,864,209	14,967	4,263,621	1,576,157	2,025,023	3,212,123	14,375,419	481,643	116,521	1,304,875	21,516,604
1869	10,891,698	150,382	5,852,678	60,715	2,373,474	1,767,037	2,693,525	1,547,602	15,033,821	148,300	72,875	1,299,861	21,095,984
1870	10,210,455	302,806	7,215,973	163,977	3,309,227	2,049,422	2,946,053	2,116,249	16,689,037	321,331	135,915	983,275	23,191,860
1871	13,473,915	322,110	7,954,060	344,179	1,367,573	1,913,200	4,031,319	1,033,307	18,406,475	316,872	345,224	1,211,840	25,375,037
1872	17,633,231	227,232	9,276,169	174,104	2,227,422	1,847,162	2,743,494	2,263,819	24,042,790	338,151	179,570	1,797,496	31,385,320
1873	19,144,815	250,704	13,394,693	286,607	5,737,904	1,284,462	5,144,175	5,622,325	26,784,184	235,113	319,771	1,993,617	40,099,185
1874	18,832,900	211,907	14,163,690	151,920	4,563,869	926,390	5,391,201	3,866,642	24,310,739	665,214	520,493	1,096,387	38,850,676
1875	18,657,276	325,648	18,042,577	115,527	1,759,308	1,785,947	7,229,912	1,495,285	29,800,295	1,155,004	248,358	757,429	40,686,283
1876	14,304,197	290,489	22,591,902	226,315	2,962,963	1,686,789	11,791,200	2,958,558	24,419,888	1,129,449	600,061	1,163,508	42,062,655
1877	13,732,085	337,897	12,471,695	158,852	1,095,451	1,460,793	7,758,501	1,108,298	18,977,153	329,577	306,311	776,933	29,256,773
1878	10,084,510	378,768	12,204,058	146,822	3,041,957	1,481,633	9,577,050	2,905,230	12,912,685	316,664	319,611	1,305,908	27,337,148
1879	8,795,340	521,917	12,081,095	222,320	1,954,042	1,521,153	8,175,951	2,252,572	12,889,557	330,968	174,757	1,272,632	25,095,867
1880	10,311,139	620,704	17,134,747	239,655	3,606,099	1,942,405	10,856,579	3,658,477	17,042,103	300,148	224,848	1,775,594	33,857,749
1881	14,898,052	721,844	17,002,046	217,444	2,642,550	2,222,122	9,122,079	2,729,246	23,536,264	671,008	177,340	1,648,121	37,704,048
1882	18,911,637	755,560	28,543,178	380,100	5,662,926	3,812,058	11,592,806	5,336,361	37,595,484	800,025	319,257	2,421,526	58,065,459
1883	20,242,222	1,149,195	29,802,820	281,309	3,126,669	4,276,712	11,089,865	2,758,994	39,312,568	2,282,473	352,552	3,081,875	58,878,327
1884	14,038,694	948,901	13,419,227	408,124	3,655,568	4,345,878	5,288,389	2,960,488	22,939,385	2,748,434	221,061	2,656,635	36,814,392
1885	11,064,186	1,140,548	13,523,613	308,293	4,853,354	3,545,544	7,235,519	3,771,524	19,700,458	1,262,515	119,376	2,346,146	34,435,538
1886	13,142,644	1,462,414	10,861,020	216,078	6,797,879	4,558,229	8,510,097	3,803,566	20,241,079	1,279,399	452,700	2,751,423	37,038,264
1887	17,977,200	1,670,952	11,504,721	111,635	6,780,853	4,720,760	10,652,219	4,353,992	22,187,955	2,002,476	608,121	3,561,358	42,766,121
1888	13,707,240	1,817,511	8,342,817	120,497	4,820,846	4,534,298	6,853,195	2,551,043	15,611,656	3,766,180	593,539	3,997,596	33,343,209
1889	19,080,647	2,582,456	11,336,123	296,654	9,054,736	5,052,610	9,233,659	4,581,064	22,146,975	4,781,110	892,158	5,768,287	47,403,253
1890	20,664,427	2,735,546	16,002,384	639,050	9,759,256	5,898,763	10,656,465	5,097,434	27,335,678	4,944,149	1,215,399	6,450,301	55,609,426
1891	20,879,851	2,819,238	19,780,470	565,338	6,977,901	6,475,119	11,968,808	3,640,940	27,883,023	5,052,318	966,851	7,985,977	57,497,917
1892	21,334,783	2,930,571	23,928,255	1,383,455	11,054,445	8,936,228	20,141,862	6,995,419	26,704,114	4,953,911	1,172,980	9,299,451	69,567,737
1893	20,387,339	3,466,885	17,885,573	1,652,200	10,131,171	14,426,669	18,511,287	7,986,637	22,720,111	4,607,549	2,034,761	12,089,492	67,949,837
1894	19,641,622	3,717,740	17,342,993	1,858,367	9,916,742	19,031,911	18,394,865	11,154,933	20,182,216	4,543,455	2,586,919	16,645,187	71,507,575
1895	18,531,083	4,122,899	19,621,862	2,515,091	10,420,277	10,465,981	20,562,325	6,684,735	21,722,294	4,512,293	1,951,985	10,243,561	65,677,193
1896	19,420,751	3,460,489	20,143,605	1,797,161	11,668,243	13,272,521	20,022,263	7,942,844	21,788,416	5,210,607	1,890,765	12,907,932	69,762,770
1897	17,513,324	3,183,390	24,593,823	1,903,924	9,589,820	13,275,822	24,809,259	5,333,860	20,663,676	5,320,563	2,058,454	11,874,291	70,060,103



# FOREIGN CARRYING TRADE.

VALUE of the Imports and Exports of the United States carried respectively in cars and other land vehicles, in American vessels and in foreign vessels during each Fiscal Year, from 1857 to 1897 inclusive, with the percentage carried in American vessels (coin and bullion are included from 1857 to 1879 inclusive,) as method of transportation of specie and merchandise cannot be separately stated.

Year ending June 30.	IMPORTS.			EXPORTS.			TOTAL IMPORTS AND EXPORTS.				Percentage carried in American vessels.
	In cars and other land vehicles.	In American vessels.	In Foreign vessels.	In cars and other land vehicles.	In American vessels.	In Foreign vessels.	In cars and other land vehicles.	In American vessels.	In Foreign vessels.	Total.	
%	\$	%	%	\$	%	%	%	\$	\$	\$	%
1857		259,116,170	101,773,971		251,214,857	111,745,825		510,331,027	213,519,796	723,850,823	70.5
1858		203,700,016	78,913,134		243,491,288	81,153,133		447,191,304	160,066,267	607,257,571	73.7
1859		216,123,428	122,644,702		249,617,953	107,171,509		465,741,381	229,816,211	695,557,592	66.9
1860		228,164,855	134,001,399		279,082,902	121,039,394		597,247,757	255,049,793	762,288,550	66.5
1861		201,544,055	134,106,098		179,972,733	69,372,180		381,516,788	203,478,296	584,995,066	65.2
1862		92,274,100	113,497,629		125,421,318	104,517,667		217,695,418	218,015,296	435,710,714	50.0
1863		109,744,580	143,175,340		132,127,891	199,880,691		241,872,471	343,056,031	584,928,502	41.4
1864		81,212,077	248,350,818		102,849,409	237,442,730		184,061,486	485,793,548	669,855,034	27.5
1865		74,385,116	174,170,336		93,017,756	262,839,588		167,402,872	437,010,124	604,412,996	27.7
1866		112,040,395	333,471,763		213,671,466	351,754,928		325,711,861	685,226,691	1,010,938,552	32.2
1867		117,209,536	300,622,035		180,625,368	280,708,368		297,834,904	581,330,403	879,165,307	33.9
1868		122,965,225	248,659,583		175,106,348	301,886,491		297,981,573	550,546,074	848,527,647	35.1
1869		136,802,024	300,512,231		153,154,748	285,979,781		289,956,772	586,492,012	876,448,784	33.1
1870		153,237,077	309,140,510		199,732,324	329,786,978		352,969,401	638,927,488	991,896,889	35.6
1871	15,187,354	163,285,710	363,020,644	7,798,156	190,378,462	392,801,932	22,985,510	353,664,172	755,822,576	1,132,472,258	31.2
1872	17,635,681	177,286,302	445,416,783	10,015,089	168,044,799	393,929,579	27,650,770	345,341,101	839,346,362	1,212,328,233	28.5
1873	17,070,548	174,739,834	471,806,765	10,799,430	171,566,758	494,915,886	27,869,978	346,306,592	966,723,651	1,340,899,221	25.8
1874	14,513,335	176,027,778	405,320,135	8,509,205	174,424,216	533,885,971	23,022,540	350,451,994	939,206,106	1,312,680,640	26.7
1875	13,083,859	157,872,726	382,949,568	7,304,356	156,385,066	501,838,949	20,388,235	314,257,792	884,788,517	1,119,434,544	25.8
1876	12,148,667	143,389,704	321,139,500	6,324,487	167,686,467	492,215,487	18,473,151	311,076,171	813,354,987	1,142,004,312	27.2
1877	10,697,640	151,834,067	329,565,833	6,767,170	164,826,214	530,354,703	17,464,810	316,660,281	859,920,536	1,194,045,627	26.5
1878	12,965,999	146,499,282	307,407,565	7,511,365	166,551,624	569,583,564	20,477,364	313,050,906	876,991,129	1,210,519,399	25.9
1879	11,983,823	143,590,353	310,499,599	7,439,862	128,425,339	600,769,633	19,423,685	272,015,692	911,269,232	1,202,708,609	22.6
1880	15,142,465	149,317,368	503,494,913	5,838,928	109,629,209	720,770,521	20,981,393	258,346,577	1,224,265,434	1,503,593,404	17.18
1881	17,193,213	133,631,146	491,840,269	8,259,308	116,955,324	777,162,714	25,452,521	250,586,470	1,269,002,983	1,545,041,974	16.22
1882	22,854,946	130,266,826	571,517,802	12,118,371	96,962,919	641,460,967	34,973,317	227,229,745	1,212,978,769	1,475,181,831	15.40
1883	23,003,048	136,002,290	564,175,576	25,089,841	104,418,210	694,331,348	48,092,892	230,420,300	1,258,306,024	1,547,020,316	15.54
1884	20,140,294	135,046,207	512,511,192	26,573,774	98,652,828	615,287,007	46,714,068	233,699,035	1,127,798,199	1,408,211,302	16.60
1885	21,149,476	112,864,052	443,513,801	24,183,299	82,601,691	636,004,765	45,332,775	194,865,743	1,079,518,566	1,319,717,084	14.76
1886	24,555,683	118,942,817	491,937,636	19,144,667	78,406,680	581,973,177	43,700,350	197,349,503	1,073,911,113	1,314,960,966	15.01
1887	27,562,059	121,365,493	543,392,216	21,389,666	72,991,253	621,802,292	48,951,725	194,356,746	1,165,194,508	1,408,502,979	13.80



VALUE of the Imports and Exports of the United States carried respectively in cars and other land vehicles, etc.—*Concluded.*

Year ending June 30.	IMPORTS.			EXPORTS.			TOTAL IMPORTS AND EXPORTS.			Percentage carried in American vessels.
	In cars and other land vehicles	In American vessels.	In Foreign vessels.	In cars and other land vehicles	In American vessels.	In Foreign vessels.	In cars and other land vehicles	In American vessels.	In Foreign vessels.	Total.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1888.....	32,209,459	123,525,298	568,222,357	22,147,368	67,332,175	606,474,964	54,356,827	190,857,473	1,174,697,321	1,419,911,621
1889.....	38,227,861	120,782,910	586,120,881	28,436,517	83,022,198	630,942,660	66,604,378	203,805,108	1,217,063,541	1,487,533,027
1890.....	40,621,361	124,948,948	623,740,100	32,949,902	77,502,138	747,376,644	73,576,263	202,451,086	1,371,116,744	1,647,139,093
1891.....	40,932,755	127,471,678	676,511,763	31,923,439	78,968,047	773,589,324	72,856,194	206,439,725	1,450,101,087	1,729,397,006
1892.....	39,726,595	139,139,891	648,535,976	33,220,629	81,033,844	916,023,675	72,947,224	220,173,735	1,564,559,651	1,857,680,610
1893.....	44,121,094	127,095,434	695,184,394	43,862,947	70,670,073	733,132,174	87,984,041	197,765,507	1,428,316,568	1,714,066,116
1894.....	29,623,095	121,561,193	503,810,334	49,221,427	73,707,023	769,212,122	78,844,522	195,268,216	1,273,022,456	1,547,135,194
1895.....	33,201,988	108,229,615	590,538,362	49,902,754	62,277,581	695,357,830	83,101,742	170,507,196	1,285,896,192	1,589,508,130
1896.....	35,533,079	117,299,074	626,890,521	61,131,125	70,392,813	751,083,000	96,666,204	187,691,887	1,377,973,521	1,662,331,612
1897.....	35,812,620	109,133,454	619,784,338	65,082,305	79,441,823	905,969,428	100,894,925	189,075,277	1,525,753,766	1,815,723,968

NOTES.—1. The amounts carried in cars and other land vehicles, were not separately stated prior to July 1, 1870. 2. Exports are stated in mixed gold and currency values from 1862 to 1870, inclusive.

# Department of Railways and Canals.

STATEMENT showing the Total Values of Foreign Merchandise transported in the In-Transit and Transhipment Trade of the United States with the British North American Possessions during each year from 1871 to 1897.

Year ending 30th June.	Received for transit and transhipment from British North American Possessions.			Shipped in transit to or transhipment for British North American Possessions.		
	By Land.	By Water.	Total.	By Land.	By Water.	Total.
	\$	\$	\$	\$	\$	\$
1871.....	6,035,585	1,918,475	7,954,060	15,624,591	2,781,884	18,406,475
1872.....	8,237,859	1,038,310	9,276,169	19,357,342	4,685,448	24,042,790
1873.....	11,700,787	1,693,906	13,394,693	20,178,666	6,605,518	26,784,184
1874.....	12,695,590	1,468,100	14,163,690	20,572,299	6,938,430	27,510,739
1875.....	16,890,022	1,152,555	18,042,577	23,794,129	6,006,166	29,800,295
1876.....	21,301,262	1,290,640	22,591,902	19,369,958	5,049,930	24,419,888
1877.....	10,835,642	1,636,053	12,471,695	17,066,855	1,910,298	18,977,153
1878.....	10,314,534	1,889,524	12,204,058	11,914,321	998,364	12,912,685
1879.....	10,098,998	1,982,097	12,081,095	12,030,635	858,952	12,889,587
1880.....	15,265,177	1,869,570	17,134,747	16,388,673	653,430	17,042,003
1881.....	15,200,967	1,801,079	17,002,046	22,828,270	527,994	23,356,264
1882.....	24,665,029	3,878,149	28,543,178	36,613,465	982,019	37,595,484
1883.....	26,382,370	3,420,450	29,802,820	38,389,318	923,250	39,312,568
1884.....	13,043,498	375,729	13,419,227	22,120,587	818,798	22,939,385
1885.....	12,755,686	767,927	13,523,613	19,105,476	594,982	19,700,458
1886.....	9,593,344	1,267,676	10,861,020	19,428,867	812,212	20,241,079
1887.....	9,377,041	2,127,680	11,504,721	20,178,365	2,009,590	22,187,955
1888.....	6,309,024	2,033,793	8,342,817	13,347,876	2,063,780	15,411,656
1889.....	8,303,171	3,032,952	11,336,123	19,299,966	2,849,263	22,149,229
1890.....	13,524,298	2,477,612	16,001,910	24,788,152	2,547,052	27,335,201
1891.....	18,065,925	1,714,545	19,780,470	25,185,706	2,697,317	27,883,023
1892.....	21,346,413	2,581,842	23,928,255	23,989,746	2,714,368	26,704,114
1893.....	13,807,662	4,077,911	17,885,573	20,151,432	2,568,679	22,720,111
1894.....	13,501,664	3,840,429	17,342,093	17,974,332	2,207,884	20,182,216
1895.....	14,068,922	5,552,940	19,621,862	18,752,226	2,970,068	21,722,294
1896.....	13,408,578	6,735,027	20,143,605	18,335,373	3,453,043	21,788,416
1897.....	17,665,422	6,928,401	24,593,823	18,430,841	,232,835	20,663,676

NOTE.—This movement forms no part of the import and export trade.

C.—TABLE showing the Tonnage of the undermentioned Articles moved on

YEARS.	VEGETABLE FOOD.						
	Flour.	Wheat.	Corn.	Barley.	Oats.	Rye.	Other Vegetable Food.*
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1869.....	71,051	670,534	256,475	99,012	92,309	13,489	99,743
1870.....	54,978	658,524	193,129	123,191	117,941	19,520	127,727
1871.....	41,211	748,549	672,057	113,992	129,891	34,563	109,935
1872.....	20,534	403,903	902,753	120,061	92,959	13,357	120,753
1873.....	19,307	803,064	637,296	70,586	70,023	30,160	114,735
1874.....	29,134	772,163	519,203	98,654	59,408	8,215	280,821
1875.....	17,635	744,293	282,031	104,475	62,717	8,309	86,090
1876.....	9,290	416,376	365,254	96,494	52,147	19,949	104,783
1877.....	8,923	448,043	723,458	139,453	66,045	35,948	77,114
1878.....	5,904	844,555	734,993	89,534	85,029	64,613	88,106
1879.....	7,164	949,466	621,180	96,144	23,164	59,210	77,071
1880.....	8,266	966,052	1,156,619	106,247	20,893	26,340	86,673
1881.....	6,926	444,832	475,823	81,587	30,321	15,484	61,588
1882.....	9,372	642,215	251,687	96,650	22,180	43,372	53,300
1883.....	9,047	573,740	522,978	58,787	51,607	95,246	67,595
1884.....	7,251	790,409	198,216	65,008	52,696	71,462	51,944
1885.....	6,869	565,922	359,982	64,587	8,234	10,211	47,505
1886.....	9,005	993,129	354,765	62,854	7,278	3,073	59,782
1887.....	4,089	936,840	446,617	75,458	35,365	6,717	47,678
1888.....	3,287	491,419	499,218	41,100	70,315	12,532	49,087
1889.....	4,429	484,141	592,550	66,110	63,674	36,329	49,663
1890.....	3,489	353,738	616,702	90,754	48,438	21,657	33,123
1891.....	3,126	756,101	142,141	71,903	16,362	68,771	33,951
1892.....	4,879	620,768	150,269	51,596	72,444	4,236	33,807
1893.....	2,367	1,093,927	252,283	49,651	24,714	6,518	20,656
1894.....	2,909	903,361	275,377	89,700	100,874	5,288	22,620
1895.....	2,240	280,550	94,403	77,868	87,839	205	59,400
1896.....	7,963	408,872	100,227	109,967	197,713	77,210	55,230
1897.....	3,206	180,035	312,776	100,337	50,345	66,387	31,489

\* Apples, meal all kinds, pease, potatoes.



# Department of Railways and Canals.

all Canals in the State of New York, during a series of twenty-nine years.

HEAVY GOODS.						
Total.	Railway Iron.	Other Iron.	Salt.	Coal.	Ores.	Total.
Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1,302,613	137,677	79,652	263,333	1,324,408	183,992	1,989,062
1,295,010	135,930	89,708	266,740	1,558,185	238,802	2,289,365
1,850,198	178,269	100,310	248,709	1,194,037	289,952	2,011,277
1,674,320	161,667	96,996	248,558	1,462,590	377,592	2,347,403
1,745,171	53,363	62,581	216,706	1,625,859	415,968	2,374,477
1,767,598	24,511	82,955	173,590	1,413,162	232,544	1,926,762
1,305,550	36,603	95,305	186,785	1,217,091	283,219	1,819,003
1,064,293	11,691	69,450	114,070	1,036,698	173,530	1,405,439
1,498,984	10,341	58,828	156,918	1,286,881	250,573	1,763,541
1,912,734	8,385	65,642	139,927	889,873	210,078	1,313,905
1,833,399	27,634	99,568	136,021	971,074	314,411	1,548,708
2,371,090	93,613	139,993	144,487	959,342	370,884	1,709,319
1,116,561	78,650	205,005	113,756	1,092,003	337,873	1,827,287
1,118,776	58,921	122,786	108,040	1,228,435	364,361	1,882,543
1,379,000	46,553	47,412	190,392	1,152,849	293,892	1,731,098
1,236,986	28,513	54,471	161,788	954,288	210,610	1,400,670
1,063,310	12,215	38,726	161,272	1,025,941	195,750	1,433,904
1,489,886	10,878	152,030	112,002	857,884	269,914	1,402,708
1,552,764	21,368	224,979	124,054	905,424	243,578	1,539,403
1,166,958	2,596	43,881	106,344	1,219,680	259,269	1,631,770
1,296,896	3,278	78,135	112,100	1,094,897	234,948	1,523,358
1,167,901	5,800	26,804	93,181	830,154	202,072	1,157,291
1,092,355	1,960	36,770	81,232	881,502	215,686	1,217,150
937,999	524	40,073	93,216	832,397	136,612	1,102,822
1,450,116	536	25,204	52,094	741,934	102,275	922,043
1,400,129	267	22,614	70,353	609,368	37,641	740,243
602,505	4,263	59,402	71,334	766,723	144,076	1,045,798
957,182	1,568	74,651	83,309	682,167	89,998	931,693
744,575	5,080	71,117	66,879	646,803	76,311	866,190

D.—TABLE showing the Tonnage of the undermentioned Articles, moved through

YEAR.	VEGETABLE FOOD.						
	Flour.	Wheat.	Corn.	Barley.	Oats.	Rye.	Other Articles. †
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1869*.....	45,674	313,825	120,599	20,951	.....	904	1,937
1872.....	26,651	239,998	254,902	6,035	7,752	64	2,745
1873.....	30,665	355,847	180,169	8,225	1,194	3	3,777
1874.....	24,019	413,212	181,151	18,871	5,954	513	8,677
1875.....	13,964	253,835	103,749	35,751	3,383	917	6,337
1876.....	15,778	201,906	144,501	18,455	24,496	1,454	3,198
1877.....	13,558	253,953	169,196	19,870	2,810	2,439	2,355
1878.....	9,121	191,982	185,931	10,979	3,088	.....	2,302
1879.....	10,710	274,570	144,506	4,655	1,239	440	2,444
1880.....	12,679	242,020	163,738	17,772	477	1,016	1,480
1881.....	9,959	127,832	101,075	24,509	.....	1,844	2,086
1882.....	12,261	215,056	54,799	20,126	611	3,226	403
1883.....	13,471	152,794	182,269	10,436	731	1,642	10,983
1884.....	13,683	144,851	118,811	7,155	10,746	1,320	9,168
1885.....	13,334	124,206	117,536	15,801	1,116	.....	1,912
1886.....	19,474	154,169	219,442	1,595	4,911	564	14,657
1887.....	23,949	221,927	114,938	9,574	12,050	.....	12,533
1888.....	16,983	160,963	194,886	5,906	26,629	811	13,608
1889.....	7,931	126,664	353,595	4,272	28,356	2,673	18,552
1890.....	14,461	118,002	327,394	10,830	27,728	1,549	20,876
1891.....	13,517	198,658	185,180	8,113	52,959	65,888	28,042
1892.....	17,046	232,019	192,548	6,433	37,173	9,392	32,815
1893.....	15,235	258,392	441,092	18,599	31,283	3,671	36,981
1894.....	33,628	270,993	169,233	28,353	27,962	567	60,673
1895.....	44,044	203,088	164,894	8,689	18,236	1,007	46,463
1896.....	42,425	320,563	320,444	11,368	28,178	9,405	56,591
1897.....	9,065	324,743	390,615	14,173	25,161	8,483	44,674

\* Fiscal.

† Apples, meal, all kinds, pease, potatoes.

# Department of Railways and Canals.

the Welland Canal, during a period of Twenty-seven Years ended 31st Dec., 1897.

HEAVY GOODS.							
Total.	Railway Iron.	Other Iron.	Salt.	Iron and salt having paid full tolls on St. Lawrence Canals.	Coal.	Ores.	Total.
Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
503,860	68,064	16,924	91,575	37,153	103,126	58,781	275,623
538,147	26,217	17,141	50,540	44,243	186,932	98,605	423,678
579,880	6,923	20,754	40,850	17,157	339,016	118,685	543,387
647,397	6,032	12,068	23,309	9,579	323,503	56,825	431,316
417,936	1,517	7,588	13,509	9,962	321,306	43,683	397,565
409,788	51	7,997	30,300	20,327	288,211	81,654	378,540
464,181	9,630	9,696	9,173	3,983	323,869	42,758	399,109
403,403	10	11,518	3,980	12,686	295,318	15,229	338,741
438,564	2,782	5,797	7,174	17,796	192,957	19,164	245,670
442,182	5,360	4,812	413	22,273	109,986	34,139	176,983
269,395	4,585	7,013	10	30,682	128,113	18,785	189,188
306,482	.....	5,348	50	17,327	237,559	23,700	283,984
373,326	1,237	7,922	66	17,037	307,058	31,785	365,105
305,734	698	652	461	3,242	274,471	53,205	332,729
273,905	78	2,055	597	14,243	248,272	26,728	291,973
414,812	166	6,123	48	12,324	271,356	27,447	317,464
394,971	1,351	5,636	.....	6,715	145,193	13,866	172,761
419,786	93	3,220	316	13,617	223,871	16,872	257,989
542,043	47	2,479	1,254	20,269	268,305	2,435	294,789
519,291	.....	753	1,027	28,047	202,384	8,138	240,349
367,177	127	1,610	2,567	7,953	224,644	3,415	240,316
527,426	163	1,567	878	3,666	211,616	355	218,245
805,253	6	2,075	374	8,139	233,096	.....	243,690
591,409	.....	3,072	159	977	203,608	.....	207,816
486,421	185	6,245	54	2,819	158,866	1,140	169,309
788,974	1,192	6,332	82	3,264	223,445	1,158	235,473
816,914	7,206	17,012	227	590	176,226	.....	201,261



E.—Table showing the tonnage of the undermentioned Articles Cleared at Buffalo and Tonawanda, for transit through the Erie Canal, for a series of twenty-nine years.

## VEGETABLE FOOD.

Year.	Flour.	Wheat.	Corn.	Barley.	Oats.	Rye.	Other Articles *	Total.	Increase.	Decrease.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	—	—
1869. ....	5,609	490,904	219,874	1,978	63,728	2,150	2,193	786,436	.....	...
1870. ....	8,258	502,158	165,577	19,944	89,156	10,593	6,906	802,592	2·05	.....
1871. ....	5,607	570,849	579,709	19,810	106,391	27,622	5,705	1,315,693	67·59	.....
1872. ....	.....	330,032	866,169	41,515	73,572	5,900	88	1,317,276	67·50	.....
1873. ....	6	737,167	611,675	8,636	51,615	22,441	634	1,432,174	82·10	.....
1874. ....	.....	650,161	459,728	3,192	44,079	112	237	1,157,509	47·18	.....
1875. ....	5,859	695,315	273,006	1,156	36,609	2,242	3,372	1,017,559	29·38	.....
1876. ....	231	377,317	356,064	6,334	24,488	12,205	4,691	783,331	.....	0·39
1877. ....	1,710	398,416	709,723	26,351	52,559	27,365	4,976	1,223,100	55·52	...
1878. ....	987	775,953	718,714	21,665	69,256	51,064	6,662	1,644,301	109·08	...
1879. ....	1,239	892,404	602,171	7,193	14,537	40,471	7,528	1,565,543	99·07	.....
1880. ....	2,743	897,603	131,857	434	16,154	12,137	4,256	2,065,184	162·06	.....
1881. ....	1,491	386,605	458,318	86	24,751	107	7,484	878,842	11·75	.....
1882. ....	1,123	586,019	241,406	1,858	9,046	19,158	6,216	864,826	9·96	.....
1883. ....	538	535,150	517,219	6,816	47,190	79,010	6,051	1,191,974	51·06	.....
1884. ....	520	767,784	194,368	4,910	47,060	57,856	4,411	1,078,909	37·18	...
1885. ....	323	540,533	356,737	3,317	5,610	6,405	5,427	918,352	14·36	.....
1886. ....	488	955,851	351,272	6,799	5,180	.....	4,001	1,353,591	72·11	.....
1887. ....	334	914,152	438,069	15,207	32,907	4,612	44,693	1,449,984	85·64	.....
1888. ....	534	469,965	494,110	6,589	68,922	10,997	1,717	1,052,834	33·87	.....
1889. ....	845	457,922	579,526	16,380	61,175	34,167	5,160	1,155,175	46·88	.....
1890. ....	195	329,531	498,641	58,563	45,202	16,903	4,362	953,397	21·23	.....
1891. ....	1,071	733,967	137,679	43,779	14,803	66,278	2,594	1,000,171	27·18	...
1892. ....	2,485	611,177	141,506	37,570	70,363	3,997	3,472	870,570	10·69	.....
1893. ....	424	1,086,834	240,767	38,986	21,981	6,156	243	1,395,391	77·43	.....
1894. ....	327	887,908	265,947	69,707	99,898	5,191	2,123	1,331,101	69·26	.....
1895. ....	98	271,957	83,611	71,185	85,507	205	15	508,596	.....	35·21
1896. ....	6,971	402,114	89,726	101,154	194,442	77,162	5,575	877,144	11·53	.....
1897. ....	1,665	168,870	303,761	88,293	48,591	65,490	11,965	688,635	.....	14·98

\*Apples, meals all kinds, pease, potatoes.

# Department of Railways and Canals.

STATEMENT to Table E showing the shipment at Oswego, during the same period.

## VEGETABLE FOOD.

Year.	Flour.	Wheat.	Corn.	Barley.	Oats.	Rye.	Other Articles. *	Total.	Increase.	Decrease.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.		
1869.....	7,361	141,360	28,585	66,794	1,113	8,569	14,033	267,815	...	...
1870.....	11,440	115,732	10,120	77,906	3,953	7,402	11,628	238,181	....	11·06
1871.....	10,043	123,173	70,218	72,675	1,806	6,250	13,259	297,424	11·05	.....
1872.....	4,773	57,865	27,148	62,172	684	6,751	10,425	169,818	..	36·59
1873.....	4,061	53,361	10,578	46,337	670	6,019	10,739	131,765	.....	50·80
1874.....		108,288	46,127	77,007	1,103	7,053	3,747	243,325	.....	9·14
1875.....	1,728	32,690	3,034	75,083	3,308	4,989	5,931	126,763	.....	52·67
1876.....	967	21,890	1,324	63,336	117	5,703	6,638	99,975	....	62·67
1877.....	855	28,955	3,308	80,306	316	6,603	6,556	126,899	....	52·61
1878.....	1,394	24,171	1,383	50,381	.....	10,598	5,222	93,149	....	65·21
1879.....	734	25,740	9,268	71,693	.....	16,623	3,110	127,168	.....	52·51
1880.....	951	17,466	15,656	82,743	....	12,598	5,996	135,410	....	49·43
1881.....	758	25,352	8,064	62,793	206	14,444	4,027	115,638	.....	56·82
1882.....	813	20,274	4,401	70,862	416	22,265	7,773	126,804	....	52·65
1883.....	432	22,634	535	32,557	.....	14,384	1,967	72,507	.....	73·00
1884.....	404	5,932	413	48,391	.....	12,173	2,819	70,132	.....	73·43
1885.....	519	6,484	22	45,264	.....	4,613	2,945	59,847	....	77·62
1886.....	737	9,579	154	42,261	.....	1,671	4,814	59,216	....	77·88
1887.....	790	675	2	44,580	....	716	1,370	48,133	....	82·02
1888.....	584	2,206	168	6,237	.....		2,196	11,191	....	95·82
1889.....	473	8,002	8,950	40,096	16	1,405	1,003	59,945	.....	77·61
1890.....	545	10,378	10,408	26,639	8	4,635	2,356	54,969	.....	79·47
1891.....	292	4,298	1,652	27,418	.....	2,130	3,620	39,410	.....	85·28
1892.....	273	4,806	5,657	5,283	....	199	2,340	18,558	.....	93·07
1893.....	119	2,036	3,968	8,476	.....	237	2,784	17,620	.....	93·43
1894.....	8	10,293	10,514	17,160	.....		2,609	40,584	.....	84·84
1895.....	66	3,073	7,352	1,900	1,816	.....	258	14,465	.....	94·23
1896.....		1,825	7,778	7,552	.....		2,468	19,623	..	93·01
1897.....		6,588	5,550	7,349	498	219	245	20,449	.....	92·37

\* Apples, meal all kinds, potatoes.

F.—TABLE showing the Tonnage of the undermentioned Articles cleared downward on the Welland Canal, during a series of Twenty-seven Years, ended 31st December, 1897.

VEGETABLE FOOD.

Year.	Flour.	Wheat.	Corn.	Barley.	Oats.	Rye.	Other Articles.†	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1869* . . . . .	44,110	310,090	119,541	3,920	.....	680	1,541	479,882
1872 . . . . .	26,648	231,056	254,534	693	7,594	64	2,300	524,889
1873 . . . . .	30,660	345,720	180,042	643	1,188	3	3,557	563,813
1874 . . . . .	24,017	406,157	181,128	377	5,953	.....	3,301	620,933
1875 . . . . .	13,930	248,555	103,477	813	3,383	500	4,304	374,962
1876 . . . . .	15,735	194,559	144,501	1,110	24,496	1,454	2,949	384,807
1877 . . . . .	13,588	248,894	169,185	10,216	2,810	2,405	1,833	448,931
1878 . . . . .	8,854	188,106	185,931	1,217	3,088	.....	2,100	389,296
1879 . . . . .	10,588	271,545	114,276	803	1,196	.....	2,387	430,795
1880 . . . . .	12,467	240,601	162,891	... ..	477	... ..	1,418	417,853
1881 . . . . .	9,655	121,393	103,075	252	.. . . .	6	1,371	235,752
1882 . . . . .	12,205	205,876	54,797	537	.....	1,954	225	275,594
1883 . . . . .	13,256	146,741	182,143	975	731	518	10,971	355,335
1884 . . . . .	13,626	135,804	118,811	270	10,746	477	9,018	288,752
1885 . . . . .	13,322	114,090	117,536	618	1,116	.....	1,628	248,310
1886 . . . . .	19,418	146,151	218,897	... ..	4,891	.....	14,581	403,928
1887 . . . . .	23,940	210,755	114,938	1,711	12,050	.....	12,149	375,543
1888 . . . . .	16,973	150,833	194,886	555	26,629	811	13,358	404,045
1889 . . . . .	7,922	120,498	353,595	197	28,356	1,918	18,273	530,759
1890 . . . . .	14,461	114,924	327,394	6,519	27,728	1,121	20,836	512,983
1891 . . . . .	13,517	196,326	185,177	8,113	52,959	65,071	27,895	549,058
1892 . . . . .	17,046	229,569	192,548	6,433	37,173	9,392	32,548	524,709
1893 . . . . .	15,232	257,203	441,092	18,461	31,283	3,671	36,981	803,923
1894 . . . . .	33,628	270,514	169,233	28,353	27,962	.....	60,587	590,277
1895 . . . . .	43,895	202,636	164,894	8,689	18,236	... ..	46,435	484,785
1896 . . . . .	42,159	319,388	320,444	11,368	28,178	8,970	54,031	784,538
1897 . . . . .	9,025	322,993	390,615	14,173	25,127	8,483	44,651	815,067

\* Fiscal.      † Apples, meal all kinds, pease, potatoes.



G.—TABLE showing the Tonnage of the undermentioned Articles passed through the Welland Canal in transit between Ports in the United States during a series of Twenty-seven Years, ended 31st December, 1897.

Year.	VEGETABLE FOOD.							HEAVY GOODS.						
	Flour.	Wheat.	Corn.	Barley.	Oats.	Rye.	Other Articles.*	Total.	Railway Iron.	Other Iron.	Salt.	Coal.	Ores.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1869	30,681	211,085	91,149	2,942	7,400	667	1,006	337,530	68,064	14,334	89,086	28,566	35,912	235,962
1872	10,482	124,695	89,761	1,391	7,400	.....	608	234,337	24,040	13,239	49,843	95,741	59,401	242,264
1873	10,805	127,727	101,329	1,920	1,188	3	392	243,366	4,659	13,826	40,507	170,242	62,942	292,176
1874	8,230	229,053	125,627	.....	5,948	.....	5,368	374,226	5,742	8,941	22,888	203,673	19,651	260,895
1875	1,881	113,832	54,188	2,641	2,946	500	1,920	177,908	14	4,123	12,931	192,767	34,616	244,451
1876	5,187	96,247	58,138	.....	1,905	525	403	162,405	.....	5,531	29,395	167,110	25,808	227,844
1877	3,342	107,396	65,260	1,603	2,314	258	413	180,586	8,976	8,688	8,336	172,868	41,107	239,975
1878	1,316	65,542	60,026	859	277	.....	341	128,361	.....	10,713	3,892	150,583	13,535	178,723
1879	159	53,791	33,401	.....	464	.....	11	87,826	2,405	3,648	6,318	118,573	17,797	148,741
1880	.....	30,611	16,122	1,551	296	.....	.....	48,580	4,743	3,515	371	65,945	18,380	92,954
1881	.....	34,320	30,031	124	.....	.....	10	65,285	1,313	5,570	.....	83,858	6,464	97,205
1882	107	30,227	32,433	537	.....	684	14	64,002	.....	4,076	.....	158,552	14,533	177,161
1883	2,041	54,382	66,128	735	731	.....	8,579	132,496	1,209	6,901	8	196,462	24,891	229,471
1884	1,715	40,956	53,707	.....	9,874	.....	8,170	114,422	698	599	.....	210,790	15,100	227,187
1885	124	53,235	63,229	732	882	.....	1	118,203	.....	1,594	.....	198,416	15,029	215,039
1886	7,591	53,258	94,048	.....	4,790	.....	13,201	172,888	156	5,328	1	189,964	11,364	206,813
1887	11,780	37,678	83,431	1,732	12,050	.....	10,859	157,530	15	4,406	.....	82,780	627	87,828
1888	8,563	39,999	102,974	2	26,510	179	11,598	189,825	63	1,601	56	173,259	2,309	177,288
1889	5,017	39,229	147,045	.....	27,492	.....	17,225	236,208	.....	1,587	896	227,476	1,204	231,163
1890	9,204	31,527	180,842	6,519	27,030	.....	20,497	275,619	.....	504	208	162,231	1,620	164,563
1891	6,802	32,097	127,494	8,113	52,823	.....	26,115	253,444	.....	292	705	186,572	1,773	189,342
1892	11,018	26,950	131,222	6,433	36,935	.....	31,992	244,550	.....	576	2	183,895	.....	184,473
1893	6,588	28,187	198,777	16,751	23,870	864	36,352	311,389	.....	344	.....	206,827	.....	207,171
1894	17,795	53,846	10,539	28,095	27,621	.....	60,462	198,358	.....	297	.....	188,521	.....	188,818
1895	10,169	27,881	100,512	7,904	17,020	.....	46,316	209,802	181	246	.....	149,490	.....	149,917
1896	16,224	34,878	175,094	11,128	16,137	490	46,456	300,407	.....	146	.....	207,348	.....	207,494
1897	7,237	28,919	169,057	14,173	14,969	.....	41,887	276,242	965	15	.....	165,143	.....	166,123

\* Apples, meals all kinds, pease, potatoes.

# Department of Railways and Canals.

H.—TABLE showing the Tonnage of Vegetable Food carried on each of the Lines of Canals and the two principal Railways, competing for the Carrying Trade between Lake Erie and Tidewater, for a series of Twenty-seven years, ended 31st December, 1897.

Year.	Total on New York Canals.	Total on Welland Canal.	Total on New York Central and Erie Railways.	Quantity cleared at Buffalo and Tonawanda by Erie Canal.	Quantity cleared at Oswego by Canal.	Quantity charged through the Welland Canal in transit between ports, in the United States.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1869*.....	1,302,613	503,860	1,087,809	786,436	267,815	337,530
1872.....	1,674,320	538,147	1,870,614	1,317,276	169,818	234,337
1873....	1,745,171	579,880	2,036,992	1,432,174	131,765	243,366
1874.....	1,767,598	647,397	2,791,517	1,557,509	243,325	374,226
1875.....	1,305,550	417,936	2,343,241	1,017,559	126,763	177,908
1876.....	1,064,293	409,788	2,875,803	783,331	99,975	162,405
1877 ..	1,408,984	464,181	2,493,683	1,223,100	126,899	180,586
1878.....	1,912,734	403,403	3,695,764	1,644,301	93,149	128,361
1879....	1,833,399	438,564	4,353,617	1,565,543	127,168	87,826
1880.....	2,371,090	442,182	4,732,385	2,065,184	135,410	48,580
1881.....	1,116,561	269,395	4,983,722	878,842	115,638	65,285
1882.....	1,118,776	306,482	3,885,577	864,826	126,804	64,002
1883....	1,379,000	372,236	4,422,461	1,191,974	72,507	132,496
1884.....	1,236,986	305,734	3,639,805	1,078,909	70,132	114,422
1885.....	1,063,310	273,905	4,105,594	918,352	59,847	118,203
1886.....	1,489,886	414,812	3,802,262	1,353,591	59,216	172,888
1887....	1,552,764	394,971	3,847,766	1,449,984	48,133	157,530
1888 ....	1,166,958	419,786	3,197,734	1,052,834	11,191	189,825
1889.....	1,296,896	542,043	3,654,984	1,155,175	59,945	236,208
1890.....	1,167,901	519,291	4,336,199	953,397	54,969	275,619
1891.....	1,092,355	367,177	3,565,381	1,000,171	39,410	253,444
1892.....	937,999	527,426	5,913,013	870,570	18,558	244,550
1893.....	1,450,116	805,253	5,107,426	1,395,391	17,620	311,389
1894.....	1,400,129	591,409	4,281,056	1,331,101	40,584	293,148
1895.....	602,505	486,421	3,798,574	508,596	14,465	209,802
1896.....	957,182	788,974	5,183,540	877,144	19,623	300,407
1897.....	744,575	816,914	5,673,638	688,635	20,449	276,242

\*Fiscal.



# Department of Railways and Canals.

1.—STATEMENT showing the Quantity of Freight passed down the Welland Canal in Canadian and United States Vessels entering the Canal at Port Colborne during the season of Navigation in 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894 1895, 1896 and 1897.

ARTICLES.	CANADIAN VESSELS.				UNITED STATES VESSELS.				TOTAL.	
	Steam.		Sail.		Steam.		Sail.		Steam and Sai	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	261	95,928	426	123,297	118	86,937	358	108,344	1163	414,506
1886.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	38,984		30,834		2,937		70,019		142,774	
Corn.....	48,547		33,315		36,852		99,644		218,358	
Barley.....							572		572	
Oats.....	6		41		4,331		459		4,837	
Pease.....	450		158						608	
Rye.....										
Coal.....	4,007		45,018				11,647		60,672	
Miscellaneous merchandise..	2,936		6,728		23,687		281		33,622	
Shingles, woodenware, &c. . .	329				252		215		1,152	
Sawed lumber.....Ft. B.M.	6,915,390		15,719,631		8,953,478		18,405,961		49,994,460	
Square timber.....Cub. ft.	564,827		2,335,205				35,500		2,935,532	
Staves.....No.	221,280		697,933						919,213	
Firewood.....Cords			390						390	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	250	86,344	372	101,745	107	94,029	163	46,152	892	328,270
1887.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	80,757		81,652		200		46,186		208,796	
Corn.....	12,341		14,775		65,981		20,582		113,679	
Barley.....					9		575		584	
Oats.....			1,376		11,098		279		12,753	
Pease.....			362						362	
Rye.....										
Coal.....	1,436		25,165				2,108		28,709	
Miscellaneous merchandise..	2,179		4,009		24,395		415		31,598	
Shingles, woodenware, &c. . .	1,716		1,081		26				2,823	
Sawed lumber.....Ft. B.M.	2,894,767		12,329,728		4,161,349		15,091,355		34,477,199	
Square timber.....Cub. ft.	498,770		1,285,594						1,784,364	
Staves.....No.			266,697						266,697	
Firewood.....Cords	299		466						765	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	242	86,838	339	93,450	114	104,505	219	60,500	914	345,293
1888.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	45,481		60,379		1,353		40,779		147,992	
Corn.....	38,620		14,251		71,988		71,175		196,024	
Barley.....										
Oats.....	672				24,967		1,311		26,950	
Pease.....			54		57				111	
Rye.....					71		632		703	
Coal.....	1,603		20,064				4,208		25,897	
Miscellaneous merchandise..	2,165		3,291		22,719		3,722		31,875	
Shingles, woodenware, &c. . .	66		84		141		6		297	
Sawed lumber.....Ft. B.M.	5,262,700		11,977,905		4,451,360		12,539,672		34,230,637	
Square timber.....Cub. ft.	687,728		1,555,307		19,000				2,262,035	
Staves.....No.	106,972		211,436				34,600		352,408	
Firewood.....Cords	179		201						380	



I.—STATEMENT showing the Quantity of Freight passed down the Welland Canal in Canadian and United States Vessels, &c.—Continued.

ARTICLES.	CANADIAN VESSELS.				UNITED STATES VESSELS.				TOTAL.	
	Steam.		Sail.		Steam.		Sail.		Steam and Sail	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	317	106,048	427	118,071	208	172,873	268	92,442	1220	489,434
1889.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat. ....	38,127		28,054		1,679		46,767		114,627	
Corn.....	60,218		42,819		152,858		96,700		353,595	
Barley.....										
Oats.....	320				25,347		2,145		27,812	
Pease.....										
Rye.....	948		634		336				1,918	
Coal.....	3,976		21,148		712		1,664		27,500	
Miscellaneous merchandise..	6,339		5,749		25,082		3,030		40,200	
Shingles, woodenware, &c....			1				51		52	
Sawed lumber. .... Ft. B.M.	5,789,226		11,632,330		11,792,850		21,026,211		50,240,617	
Square timber..... Cub. ft.	924,645		2,934,989						3,859,634	
Staves..... No.	35,700		174,649						220,349	
Firewood..... Cords			46						46	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	342	110,056	443	117,400	202	204,542	142	50,622	1129	482,620
1890.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	43,308		35,633		7,514		32,239		118,694	
Corn.....	63,095		51,439		172,756		40,104		327,394	
Barley.....					3,304		3,215		6,519	
Oats.....	479		73		27,030				27,582	
Pease.....					14				14	
Rye.....	1,121								1,121	
Coal.....	1,049		21,732				615		23,396	
Miscellaneous merchandise..	3,146		5,683		32,194		2,510		43,533	
Shingles, woodenware, &c....	15		1,266		8				1,289	
Sawed lumber. .... Ft. B.M.	5,921,240		5,167,201		10,274,335		14,290,800		35,653,576	
Square timber. .... Cub. ft.	1,141,194		3,395,832						4,537,026	
Staves..... No.	12,255		19,947						32,202	
Firewood..... Cords	15		566						581	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	256	107,575	173	68,061	241	241,317	130	50,063	800	467,016
1891.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	62,859		56,953		36,425		33,853		190,090	
Corn.....	20,510		9,550		137,852		17,039		184,951	
Barley.....					5,444		4,061		9,505	
Oats.....					50,212		1,076		51,288	
Pease.....	390								390	
Rye.....	29,581		11,296		16,361		7,343		64,581	
Coal.....	158		20,388				3,851		24,397	
Miscellaneous merchandise..	8,369		6,007		37,537		2,578		54,491	
Shingles, woodenware, &c....							4		4	
Sawed lumber. .... Ft. B.M.	4,268,874		4,648,824		8,067,351		18,745,628		35,730,677	
Square timber. .... Cub. ft.	449,406		566,109						1,015,515	
Staves..... No.	1,000								1,000	
Firewood..... Cords										

# Department of Railways and Canals.

I.—STATEMENT showing the Quantity of Freight passed DOWN the Welland Canal in Canadian and United States Vessels, &c.—*Continued.*

ARTICLES.	CANADIAN VESSELS.				UNITED STATES VESSELS.				TOTAL.	
	Steam.		Sail.		Steam.		Sail.		Steam and Sail	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	239	100,324	186	73,140	245	248,837	134	52,087	804	474,388
1892.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	74,578		54,764		60,364		36,898		226,604	
Corn.....	17,477		7,369		146,080		21,631		192,548	
Barley.....					3,995		2,438		6,433	
Oats.....					36,935				36,935	
Pease.....	524								524	
Rye.....	5,066				3,718		608		9,392	
Coal.....	775		13,350				1,365		15,490	
Miscellaneous merchandise..	2,139		2,786		44,117				49,042	
Shingles, woodenware, &c....	1				45		9		55	
Sawed lumber.... Ft. B.M.	6,278,253		7,504,256		10,494,692		26,832,564		51,109,765	
Square timber..... Cub. ft.	754,213		1,421,260		2,601		1,310		2,179,384	
Staves..... No.	46,800		32,838						79,638	
Firewood..... Cords										
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	193	100,107	143	58,652	390	375,682	236	122,326	962	656,767
1893.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	83,447		31,185		72,671		68,628		255,931	
Corn.....	23,817		12,946		313,246		91,083		441,092	
Barley.....	1,527		183		16,189		562		18,461	
Oats.....	223				27,903		3,038		31,164	
Pease.....										
Rye.....					3,216		455		3,671	
Coal.....	638		13,580				5,849		20,067	
Miscellaneous merchandise ..	6,179		286		44,976		1,647		53,088	
Shingles, woodenware, &c....			15		22				37	
Sawed lumber.... Ft. B.M.	13,750,267		2,748,941		17,359,573		41,863,852		75,722,633	
Square timber..... Cub. ft.	836,048		1,437,893		5,133				2,279,074	
Staves..... No.			18,484						18,484	
Firewood..... Cords										
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	199	104,649	112	57,668	287	279,621	144	63,770	742	505,708
1894.	Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	98,586		54,444		79,715		37,095		268,840	
Corn.....	10,368		5,614		122,211		31,040		169,233	
Barley.....	258				28,095				28,353	
Oats.....	175		107		27,621				27,903	
Pease.....										
Rye.....										
Coal.....	1,483		1,892		61		11,109		14,545	
Miscellaneous merchandise ..	16,949		664		83,198		1,977		102,788	
Shingles, woodenware, &c....	22								22	
Sawed lumber.... Ft. B.M.	8,423,295		279,330		11,719,664		31,891,456		52,313,745	
Square timber..... Cub. ft.	771,328		1,578,981						2,350,309	
Staves..... No.										
Firewood..... Cords										

I.—STATEMENT showing the Quantity of Freight passed DOWN the Welland Canal in Canadian and United States Vessels, &c.—*Concluded.*

ARTICLES.	CANADIAN VESSELS.				UNITED STATES VESSELS.				TOTAL.		
	Steam.		Sail.		Steam.		Sail.		Steam and Sail		
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	
	209	108,776	151	73,895	205	223,743	101	41,327	666	447,741	
	1895.		Tons.		Tons.		Tons.		Tons.		
Wheat.....	72,895		68,935		29,345		33,723		201,898		
Corn.....	16,854		3,724		126,943		17,369		164,890		
Barley.....	798		162		7,729				8,689		
Oats.....	1,531		246		16,442				18,219		
Pease.....											
Rye.....											
Coal.....	2		3,984				4,426		8,412		
Miscellaneous merchandise ..	37,356		2,361		67,705		1,324		108,746		
Shingles, woodenware, &c....	20				863		1,079		1,962		
Sawed lumber .... Ft. B.M.	1,057,146		248,071		9,385,890		14,929,734		25,620,841		
Square timber..... Cub. ft.	1,027,913		2,049,368				35,000		3,112,281		
Staves..... No.											
Firewood..... Cords											
		No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
		224	122,521	181	82,543	343	337,983	163	96,506	911	639,553
1896.		Tons.		Tons.		Tons.		Tons.		Tons	
Wheat.....	113,331		90,979		78,741		34,476		317,527		
Corn.....	9,360		3,855		218,315		88,914		320,440		
Barley.....	240				11,128				11,368		
Oats.....	441		1,270		24,847		1,620		28,178		
Pease.....	1,403		1,354				273		3,030		
Rye.....	5,035		644		2,837		454		8,970		
Coal.....	7		11,106		1,255		629		11,997		
Miscellaneous merchandise ..	29,820		1,452		82,319		4,374		117,965		
Shingles, woodenware, &c....	134				22				156		
Sawed lumber .... Ft. B.M.	2,123,213				18,259,810		27,796,146		48,179,169		
Square timber..... Cub. ft.	942,923		1,649,145				246,024		2,838,092		
Staves..... No.											
Firewood..... Cords.							55		55		
		No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
		225	131,907	163	76,760	388	382,231	144	86,675	920	677,573
1897.		Tons.		Tons.		Tons.		Tons.		Tons.	
Wheat.....	121,762		55,724		106,064		37,891		321,441		
Corn.....	33,694		15,244		274,855		66,822		390,615		
Barley.....					14,173				14,173		
Oats.....	223				23,515		1,168		24,906		
Pease.....	1,851								1,851		
Rye.....	2,047		919		5,517				8,483		
Coal.....	3,873		3,947		368		1,615		9,803		
Miscellaneous merchandise ..	15,739		3,290		70,968		4,174		94,071		
Shingles, woodenware, &c....	1,268		5		404				1,677		
Sawed lumber..... Ft. B.M.	1,573,447				20,284,446		20,673,202		42,531,095		
Square timber..... Cub. ft.	1,327,823		2,217,629				616,093		4,161,545		
Staves..... No.	2,577,160								2,577,160		
Firewood..... Cords	4								4		



# Department of Railways and Canals.

STATEMENT showing the Quantity of Through Freight passed up the Welland Canal in Canadian and United States Vessels, during the Season of 1897.

ARTICLES.	CANADIAN VESSELS.				UNITED STATES VESSELS.				TOTAL.	
	Steam.		Sail.		Steam.		Sail.		Steam and Sail	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	222	132,277	165	76,809	390	386,558	141	86,696	918	682,340
1897.	Tons.		Tons.		Tons.		Tons.		Tons.	
Class 3.										
Cement and water line.....	765		72		.....		.....		837	
Fish.....	10		.....		55		.....		65	
Iron, pig.....	6		.....		.....		.....		6	
do all other.....	583		.....		15		.....		598	
Salt.....	26		.....		.....		.....		26	
Steel.....	5		.....		.....		.....		5	
Articles not enumerated.....	341		685		1,360		3		2,389	
Class 4.										
Crockery and earthenware...	37		.....		111		.....		148	
Manilla.....	1		.....		.....		.....		1	
Nails.....	162		.....		.....		.....		162	
Paint.....	25		.....		.....		.....		25	
Pitch and tar.....	21		.....		.....		.....		21	
Sugar.....	369		.....		5,658		.....		6,027	
Tin.....	360		.....		17		.....		377	
Merchandise not enumerated.	2,690		.....		38,449		.....		41,139	
Class 5.										
Produce of wood.....	23		.....		23		.....		46	
Special Class.										
Coal.....	1,277		.....		127,101		38,042		166,420	
Total.....	6,701		757		172,789		38,045		218,292	

Canadian steam vessels carried .....

do sailing do .....

United States steam vessels carried.....

do sailing do .....

6,701 tons

757 do

172,789 do

38,045 do

WELLAND CANAL THROUGH FREIGHT RECAPITULATION.

WELLAND CANAL—WEST BOUND FREIGHT.

The total quantity of Through Freight passed up the Welland Canal in Canadian and United States vessels, during the Season of Navigation in 1897, is as follows :—

SUMMARY.	Tons.	Tons.
In Canadian steam vessels.....	6,701	
do sail do .....	757	
Total quantity in Canadian vessels .....		7,458
In United States steam vessels .....	172,789	
do sail do .....	38,045	
Total in United States Vessels .....		210,834
Grand total quantity of freight passed up the Welland Canal in Canadian and United States vessels.....		218,292

STATEMENT of the Quantity of Through Freight passed UP and DOWN on the Welland Canal, during the season of Navigation in 1897.

SUMMARY.	Tons.	Tons.
In Canadian steam vessels up.....	6,701	
do do down.....	214,824	
Total in Canadian steam vessels.....		221,525
In Canadian sail vessels up.....	757	
do do down .....	123,695	
Total in Canadian sail vessels.....		124,452
Total quantity in Canadian vessels.....		345,977
In United States steam vessels up.....	172,789	
do do down .....	529,684	
Total in United States steam vessels.....		702,473
In United States sail vessels up.....	38,045	
do do down.....	158,255	
Total in United States sail vessels.....		196,300
Total quantity in United States vessels.....		898,773
Total in Canadian and United States vessels.....		1,244,750
	East bound.	West bound.
In Canadian vessels.....	338,519	7,458
In United States vessels.....	687,939	210,834
Total.....	1,026,458	218,292

## CANADIAN STEAM VESSELS

CANADIAN STEAM VESSELS

CANADIAN SAILING VESSELS

## CANADIAN SAILING VESSELS

UNITED STATES STEAM VESSELS

## UNITED STATES STEAM VESSELS

661,543	6,116	...	6,645	18,411	122	...
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661,543	6,116	...	6,645	18,411	122	...
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J.—Statement of Large Class of Ves

Date of Arrival.	Name of Vessels.	Registered Tonnage.	Dimensions.			Depth of Water on Arrival.		Wh
			Length over all.	Width of Beam.	Depth of Hold.	Forward.	Aft.	
1897.		Tons.	Ft.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Bu
May 3	Rosemount.. ....	989	253	41	24 3	15 1	15	70
do 15	" .....	989	253	41	24 3	15 8	15 6	76
do 17	Bannockburn.....	1,035	245	40	18 4	15 10	15 8	75
do 28	Rosemount. ....	989	253	41	24 3	15 10	15 8	7
do 31	Rosedale .....	977	254	35	22 6	14 1	14 4	7
June 21	Rosemount. ....	989	253	41	24 3	16	15 11	7
do 26	Bannockburn.....	1,035	245	40	18 4	15 11	16	7
July 3	Rosemount. ....	989	253	41	24 3	15 8	15 9	7
do 8	Bannockburn.....	1,035	245	40	18 4	16	16 3	76
do 17	Rosemount. ....	989	253	41	24 3	15 6	15 8	77
do 22	Bannockburn.....	1,035	245	40	18 4	15 8	16 3	7
Sept. 6	Algonquin.....	1,172	245	40	20 6	15 6	16	81
do 20	" .....	1,172	245	40	20 6	15 8	15 8	82
do 24	Rosedale.....	977	254	35	22 6	14 7	14 10	73
do 25	Bannockburn.....	1,035	245	40	18 4	16 1	15 6	75
Oct. 5	Rosemount.....	989	253	41	24 3	15 8	15 6	76
do 11	Arabian .....	770	180	31	13 6	14 3	13 9	41
do 14	Bannockburn.....	1,035	245	40	18 4	15 10	15 4	72
do 16	Rosedale .....	977	254	35	22 6	13 5	13 10	65
do 21	Algonquin.....	1,172	245	40	20 6	14 8	15 2	7
do 26	Rosemount.....	989	253	41	24 3	14 9	14 9	76
Nov. 7	Rosedale .....	977	254	35	22 6	14 7	15 2	6
do 7	Bannockburn.....	1,035	245	40	18 4	15 5	15 3	70
do 13	Rosemount... ..	989	253	41	24 3	14 11	14 10	71
do 20	Bannockburn.....	1,035	245	40	18 4	14 9	15 3	68
do 27	Rosemount.....	989	253	41	24 3	14 10	15	70
Dec. 2	Algonquin.....	1,172	245	40	20 6	15	15 1	74
do 2	Rosedale .....	977	254	35	22 6	13 10	13 11	65
do 3	Bannockburn.....	1,035	245	40	18 4	15 3	14 8	6
								2,09

May 6	Minnedosa.. ....	1,041	240	36 3	15 2	14 8	14 8	65
do 24	Minnedosa. ....	1,041	240	36 3	15 2	14 3	14	65
Oct. 26	Melrose .....	740	184	34 5	14 5	14	14	52
do 26	Minnedosa .....	1,041	285	36 2	15 2	14	14	60
								242

April 20	Samoa .....	837	205	34 5	17 7	15 3	15 7	.....
do 20	Niko .....	929	189	35	13	14 11	15 3	.....
do 22	J. J. Hill.....	787	170	40 9	17 1	15 6	15 4	.....
do 23	Germanic .....	892	216	36 2	18 6	15	15 2	.....
do 24	Ashland .....	957			15	14 6	14 6	.....
do 26	W. A. F .....				25 6	14 8	15 3	.....
do 26	Johr .....					14 3	14 3	.....
do 26	.....					14 11	15	.....





Department of Railways and Canals.

K.—STATEMENT showing the Quantity of Freight passed Eastward, from Lake Erie, through the whole length of the Welland and St. Lawrence Canals, to Montreal, during the Seasons of Navigation in 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896 and 1897.

Articles.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
<i>Class 3.</i>													
Cement and water lime												12	58
Clay, lime and sand							371			195	79	5	
Iron, pig.	7	15		418						1	1,766	2,020	7,564
do all other											394	542	375
Steel												200	
Stone for cutting												1,263	
Apples	513	49	33					54		50	28	240	
Barley									600	258	959		
Coru	44,401	116,517	24,609	66,443	195,350	139,798	52,539	53,689	278,564	60,661	70,235	182,330	267,583
Flaxseed													3,293
Flour	2,874	2,934	6,140	3,865	6,841	3,065	3,324	2,874	5,514	16,503	30,916	11,964	1,029
Meal, all kinds.	16	125	87	100	148	222	67	16		4	65		
Oats					320	479			9,761	175	1,654		
Pease	11	608	362									12,373	6,847
Rye					1,284	1,120	390	524	3,669			3,020	2,078
Salt							64,978	9,119				8,323	8,435
Seeds, all kinds	42	33		12	3	2	2	75				20	216
Tobacco, raw		25					1						51
Wheat	52,157	86,815	160,063	93,915	70,815	75,515	159,785	194,281	209,212	212,557	158,643	255,198	278,498
All other agricultural products,													
vegetable.	1		17		798	3	2			29			
Hides, skins, horns and hoofs.							2	20				29	
Horses	2	1	1	2	2	3	2	2	1	1	1	1	1
Lard and lard oil.		22		54			100						
Pork	30	936	418	265	1,220	221	201			717		1	
All other agricultural products,													
animal.	4	68	29	39	32	117		103					
Total, Class 3.	100,058	208,148	191,759	165,113	276,813	220,545	281,762	260,757	507,321	201,151	264,740	477,541	576,008
<i>Class 4.</i>													
Ashes	97	44	113	85	107	70	40	17	23	19	34	94	133
Crockery												5	

K.—STATEMENT showing the Quantity of Freight passed Eastward, from Lake Erie, through the whole length of the Welland and St. Lawrence Canals, to Montreal, &c.—*Concluded.*

Articles.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
<i>Class 4—Con.</i>													
Furniture .....	5	6	9	2		1	2	1		2			1
Glass, all kinds. ....				3		1	1						53
Molasses. ....		28									100	167	9
Nails. ....			1										
Oil. ....	7	6	14		4	6					6	23	112
Paint. ....		1									2		
Pitch and tar. ....													
Rags. ....												4	
Sugar. ....			15									1	
Stone, wrought. ....			12										
Turpentine. ....													
Whisky, beer, and other spirits. ....	29	8		3	20	26	105	6	1		101		46
Merchandise not enumerated. ....		100	72	105	193	142	278	36	4	330	558	376	1,226
Total, Class 4. ....	138	193	236	198	324	246	426	60	28	351	801	679	1,580
<i>Class 5.</i>													
Barrels, empty. ....	128	6	88	40				1			1		
Hoops. ....													257
Sawed lumber. ....	19,945	18,707	7,001	5,175	6,118	3,579	3,908	1,678	667	683	1,117	657	478
Staves, pipe and barrel. ....	856	332	184	139				8					4,716
do West India and pipe. ....		287	131	1,623	270			200					
Timber, square, in vessels. ....	639	1,330											
do in rats. ....	11,128	15,410	14,390	11,586	9,302		5,680	400				1,200	1,207
Woodenware. ....	76	101	45	25		1				6			
Total, Class 5. ....	32,772	36,173	21,839	18,588	15,690	3,580	9,588	2,327	667	689	1,118	1,857	6,658
<i>Special Class.</i>													
Coal. ....													
Grand total. ....	132,968	244,514	213,834	183,899	292,827	224,371	291,776	263,144	508,016	292,191	266,659	480,077	584,246

# Department of Railways and Canals.

L.—STATEMENT showing the Quantity of Freight passed Westward from Montreal, through the whole length of the St. Lawrence and Welland Canals to Lake Erie, during the Seasons of Navigation in 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896 and 1897.

Articles.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
<i>Class 2.</i>													
Bricks.....	44	66	3	187	84	252	469	1,171	3,169	1	24	15	70
Cement and water lime.....	117	498	1,740	1,177	823	62	2,380	74	1,570	2,281	1,859	1,686	837
Clay, lime and sand.....		1	134	95	3	8	206	112	240	253			4
Fish.....		1	95	1	80	26	7	426	465	512		11	10
Gypsum.....	13												
Iron, railway.....	12,356	6,629	153	9,148	15,513	20,003	2,855	1,171	6,576	20		1,687	
do pig.....	23	10	368	573	250	20	112	74	25		56	28	6
do all other.....	290	76	1,997	297	290	584	595	387	543	114	1,831	727	559
Salt.....	1,574	5,609	4,197	3,599	4,216	7,440	4,391	2,034	995	843	932	822	25
Steel.....		1	423	3	3	1		269	426	248	528		
Stone for cutting.....	7					12		145				4	62
Flour.....						48			3				
Hay.....													
Meals.....													
Oats.....				31						15	124		
Potatoes.....													
Seeds, all kinds.....			4										
Agricultural products not enumerated, vegetables.....	1			24	215	100				33	25	99	121
Hides and skins.....				35	19		52			5	26		4
Horses.....											26		
Lard and lard oil.....	3		3		2							1	
Pork.....						72		16			1		
Wool.....			4			33							
All other articles not enumerated.....		6	4	77		13	2	13					
Total, Class 2.....	14,428	12,897	9,115	15,247	21,498	28,675	11,071	6,345	12,202	4,335	5,432	5,080	1,698
<i>Class 3.</i>													
Ashes, pot and pearl.....	226	20				10							1
Crockery and earthenware.....	10	40				11							4
Dye woods, &c.....		1	164	336	112		251	88	98	107	12	83	
Furniture.....		9	4	1			1	3					2



L.—STATEMENT showing the Quantity of Freight passed Westward from Montreal, through the whole length of the St. Lawrence and Welland Canals to Lake Erie, &c.—*Concluded.*

Articles.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Class 4—Con.													
Glass, all kinds	32	39	53	77	71	23	30	152	365	175	394	612	799
Manilla		7	5	1						11			
Molasses		23	1	7	56			32	43	42	20	1	
Nails	205	389	147	578	736	453	560	276	472	500	1,149	409	129
Oil, in barrels	10	82	28	22	9	11	64	2	44	8	31	33	12
Paint	24	36	80	59	49	24	61	15	70	8	75	49	20
Pitch and tar		5	1			13	22	15	26	152	67	60	20
Resin						1							
Soda, ash	164	975	1,116	1,196	766	554	377	352	68	94	84	74	249
Stone, wrought									14			17	25
Sugar	64	316	207	98	7	551	412	1,320	2,218	2,724	1,430	1,873	311
Tin	10	549	2,225	198	480	40	23	27	34	327	396	395	359
Turpentine		1	1	1	1	2							
White lead		3	4	2	4	19	3	6	35	2	7	10	5
Whiting			7		33	34	50	71	31	1	113	56	104
Whisky, beer, &c.	9				124	350	294	220	26	53	77	51	93
Merchandise not enumerated	259	174	287	228	1,422	1,180	810	538	799	900	1,268	1,247	711
	712	1,008	619	1,259									
Total, Class 4	1,725	3,677	4,950	4,063	3,870	3,276	2,989	3,125	4,343	5,104	5,123	4,970	2,844
Class 5.													
Barrels, empty					2								
Lumber, sawn, in vessels		227											
Woodenware	2												
Total, Class 5	2	227			2								
Special Class.													
Coal													
Grand Total	16,155	16,801	14,075	19,310	25,370	31,951	14,060	9,470	16,545	9,439	10,555	10,050	4,542

# Department of Railways and Canals.

M.—STATEMENT showing the Quantity of Freight passed Eastward through the Welland Canal, from United States Ports to United States Ports, during the Season of Navigation from 1885 to 1897, inclusive.

Articles.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
<i>Class 3.</i>													
Bricks		41				4							845
Cement and water lime		31		4			1						
Fish			2						5	5			
Iron, railway													
do all other											181		965
Salt.		45			520	1	10	1	102		214		
Steel		1					494						
Stone for cutting.				3				1				498	
Apples													
Barley													
Corn	63,229	93,503	1,709	2		6,519	8,113	6,433	16,751	28,095	7,904	11,128	14,173
Flour.	124	7,591	83,431	102,974	147,045	180,842	127,494	131,222	198,777	105,329	100,512	175,094	169,057
Hay, pressed			11,780	8,563	5,017	9,204	6,802	11,018	6,588	17,795	10,169	16,224	7,237
Meal, all kinds.													301
Oil cake.		13,201	10,726	11,598	17,224	20,482	26,096	31,724	36,352	60,390	46,316	46,456	41,644
Oats													
Potatoes	882	4,790	12,050	26,510	27,492	27,030	52,823	36,935	23,870	27,621	16,442	16,137	14,969
Rye.					1								
Seeds, all kinds.				179					864			490	
Wheat.	53,235	236	44	48	151	135	256	50	16		14	78	299
Agricultural products, vegetable.		53,258	37,678	39,999	39,229	31,527	32,097	26,950	28,187	53,846	27,881	34,878	28,919
Hides and skins, &c.		2	2			14	42						
Horses		414	170	39									
Lard and lard oil, &c.		1	2		1	1	3		2		8	41	23
Meats, other than pork		13	14	19	32	30	10		1	4		3	3
Pork.		1	18	14	3	15	2				6	1,348	1,444
Sheep.		106	108	19	21	88	73	1		56	30	390	243
Wool.									52		87		
		1,125	86		452		1,237	70	80	1,484	1,536	900	197
Total, Class 3.	117,470	174,359	157,820	189,989	237,188	275,893	255,553	244,434	311,647	294,654	211,300	303,665	280,319
<i>Class 4.</i>													
Agricultural implements.			9										
Crockery and earthenware				1									
Furniture.		21	24	30	30	21	7		6		2		

M.—STATEMENT showing the Quantity of Freight passed, Eastward through the Welland Canal, from United States Ports to United States Ports, during the Season of Navigation from 1885 to 1897, inclusive.—*Concluded.*

Articles.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
<i>Class 4.—Con.</i>													
Glass, all kinds		2					1						
Nails		4											
Oil, in barrels..		6	8				1				30	1,005	198
Paint..						3		44					
Soda, ash....													
Stone, wrought..		38			2						59	165	31
Sugar.....													
White lead.....		21	63	151	190	1		46			15		
Whisky, beer and all other spirits..	2	824	469	1,453	1,679	1,822	1,865	1,331	1,693	2,976	7,656	3,990	3,591
Merchandise.....													
Total, Class 4.....	2	916	573	1,635	1,902	2,075	2,041	1,421	1,782	3,033	7,762	5,160	3,820
<i>Class 5.</i>													
Empty barrels.....									9			10	
Firewood in vessels.....												165	
Lumber, sawn, in vessels.....	44,668	43,776	29,845	28,333	55,074	38,030	45,504	54,173	68,985	62,905	41,974	75,515	68,280
Masts and spars, in vessels.....													403
Hoops.....											446		
Railway ties, in vessels.....	111	463		6	51				13				
Shingles.....				82									
Staves, barrel.....											500		1,040
Timber, square, in vessels.....		2	26	141	333	8	4	54				12	1
Woodenware, &c.....													
Total, Class 5.....	44,779	44,241	29,871	28,562	55,458	38,038	45,508	54,227	69,007	62,905	42,920	75,702	69,724
<i>Special Class.</i>													
Coal.....	4,974	5,400	1,163	878	1,124	615	1,382	651	2,123	727	603	1,255	
Stone, not suitable for cutting.....					1,681	18	1,773						
Kryolite.....						1,620							
Total, Special Class.....	4,974	5,400	1,163	878	2,805	2,253	3,155	651	2,123	727	603	1,255	
Grand Total.....	167,225	224,916	189,427	221,064	297,353	318,259	306,257	300,733	384,559	361,319	262,585	385,782	353,863



## Department of Railways and Canals.

N.—STATEMENT showing the number of Vessels which took their cargoes of Wheat through the Welland Canal from ports west of Port Colborne, the quantity transhipped at Kingston and Prescott and the quantity of each cargo through the St. Lawrence Canals to Montreal, during the Season of Navigation in 1897.

Name of Vessels.	Original quantity through the Welland Canal.	Quantity transhipped at Kingston and Prescott.	Cargo through the St. Lawrence Canals to Montreal
	Tons.	Tons.	Tons.
Canadian steamer "Arabian" .....	1,230	718	512
do do .....	1,241	706	535
do do .....	1,205	676	529
do "Iowa" .....	405	47	358
do Sail "Melrose" .....	1,570	894	676
do do .....	1,560	885	675
do do "Selkirk" .....	1,512	852	660
do do "Winnipeg" .....	1,513	883	630
do do do .....	1,500	870	630
Total .....	11,736	6,531	5,205

Number of cargoes of wheat .....	9
Quantity through Welland Canal to Kingston and Prescott .....	11,736 tons.
do transhipped at Kingston and Prescott .....	6,531 do
do taken to Montreal in vessels in which it arrived at Kingston and Prescott .....	5,205 do

N.—STATEMENT showing the number of Vessels which took their cargoes of Corn through the Welland Canal from ports west of Port Colborne; the quantity transhipped at Kingston and Prescott and the quantity of each cargo through the St. Lawrence Canals to Montreal during the Season of Navigation in 1897.

Name of Vessel.	Original quantity through the Welland Canal.	Quantity transhipped at Kingston and Prescott.	Cargo through the St. Lawrence Canals to Montreal.
	Tons.	Tons.	Tons.
Canadian steamer "Cuba" .....	686	306	380
do do .....	308	.....	308
do do .....	336	.....	336
do do .....	308	.....	308
do do .....	336	.....	336
do do .....	336	.....	336
do "Lake Michigan" .....	365	143	222
do do "Melbourne" .....	336	.....	336
do do do .....	364	.....	364
Total .....	3,375	449	2,926

Number of cargoes of corn .....	9
Quantity through Welland Canal to Kingston and Prescott .....	3,375 tons.
do transhipped at Kingston and Prescott .....	449 do
do taken to Montreal in vessels in which it arrived at Kingston and Prescott .....	2,926 do

RECAPITULATION of the number of Vessels passed down, the Welland Canal with Cargoes of Grain for Montreal, the quantity transhipped at Kingston and Prescott, and the quantity taken to Montreal for the Season of 1897.

	Number of Cargoes.	Total Number.
Wheat.....	9	
Corn.....	9	
Total .....		18
	Tons. 11,736	Tons.
Quantity of wheat through the Welland Canal bound for Montreal.....	3,375	
do corn do do .....		
Total through Welland Canal.....		15,111
Quantity of the above transhipped at Kingston and Prescott :—		
Wheat.....	6,531	
Corn.....	449	
Total transhipped .....		6,980
Quantity of the above cargoes taken to Montreal in vessels in which it arrived at Kingston and Prescott:—		
Wheat.....	5,205	
Corn.....	2,926	
Total quantity to Montreal.....		8,131
Total.....		15,111

# Department of Railways and Canals.

O.—STATEMENT showing the quantity of Grain passed down the Welland Canal to Kingston and Prescott in Canadian and United States Vessels, entering the Canal at Port Colborne, during the Season of Navigation in 1897.

	CANADIAN VESSELS.				UNITED STATES VESSELS.				TOTAL.	
	Steam.		Sail.		Steam.		Sail.		Steam and Sail.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
	121	91,623	59	37,072	141	131,268	56	43,114	377	303,077
	Tons.		Tons.		Tons.		Tons.		Tons.	
Barley.....										
Corn.....	33,694		15,244		113,979		47,531		210,448	
Oats.....	223				6,362		1,168		7,753	
Pease.....					1,851				1,851	
Rye.....	2,047		919		5,517				8,483	
Wheat.....	121,762		55,376		78,193		31,246		286,577	
Total .....	157,726		71,539		205,902		79,945		515,112	

121 cargoes in Canadian steam vessels, total quantity..... 157,726 tons.  
59 do do sail do do ..... 71,539 do  
141 do United States steam vessels, total quantity..... 205,902 do  
56 do do sail do ..... 79,945 do



P.—STATEMENT of the total Quantity of Grain arrived at Kingston and Prescott in vessels which passed down the Welland Canal during the Season of Navigation in 1897.

Summary.	Tons.	Tons.
Canadian steam vessels—121 cargoes of grain.....	157,726	
do sail do 59 do .....	71,539	
Total in Canadian vessels .. .. .		229,265
United States steam vessels—141 cargoes of grain.....	205,902	
do sail do 56 do .....	79,945	
Total in United States vessels .....		285,847
Total in Canadian and United States vessels.....		515,112
Distributed as follows, viz. :—		
18 cargoes arrived at Kingston and Prescott in Canadian vessels, with an aggregate quantity of . . . . .	15,111	
Transhipped at Kingston and Prescott.. . . .	6,980	
Quantity taken to Montreal in vessels in which it arrived at Kingston and Prescott.	... ..	8,131
Vessels arrived at Kingston and Prescott and discharged all their cargoes, as follows :—		
162 cargoes in Canadian vessels.....	214,154	
197 do United States vessels.....	285,847	
Aggregate quantity discharged .....	500,001	
Quantity transhipped to Montreal.....	450,270	
Total quantity transhipped from Kingston and Prescott to Montreal.....	... ..	457,250
do remaining at Kingston and Prescott .....		49,731
Total .....		515,112

## Department of Railways and Canals.

Q.—COMPARATIVE STATEMENT of the Quantity of Grain passed down the Welland Canal to Kingston and Prescott for the Seasons of Navigation in 1896 and 1897.

	1896.		1897.	
	No. of Cargoes.	Tons.	No. of Cargoes.	Tons.
Quantity arrived at Kingston and Prescott in Canadian vessels.....	196	227,912	180	229,265
Quantity arrived at Kingston and Prescott in United States vessels.....	158	217,978	197	285,847
Total.....	354	445,890	377	515,112
Quantity transhipped at Kingston and Prescott in Canadian Vessels for Montreal.....		378,257		457,250
Quantity taken to Montreal in vessels in which it arrived at Kingston and Prescott.....		8,982		8,131
Quantity remaining at Kingston and Prescott.....		58,651		49,731
Total.....		445,890		515,112

7 vessels took their cargoes through to Montreal intact in 1897, against 3 in 1896.

11 vessels discharged part of their cargo in 1897, against 16 in 1896.

359 vessels discharged all their cargoes in 1897, against 335 in 1896.

R.—STATEMENT showing the number of Vessels, their Tonnage, Number of Passengers and Tons of Freight passed down the Rapids of the St. Lawrence Canals during the Season of Navigation in 1897.

Destination.	No. of Sec.	No. of Vessels	Tonnage of Vessels.	No. of Passengers.	Class Three.	Class Four.	Class Five.	Tolls.
					Tons.	Tons.	Tons.	\$ cts.
Prescott to Montreal.....	4	134	63,632	8,186	81	974	2	1,504 46
do Lachine.....	3	54	31,297	3,124	1,357	770	.....	678 66
do Valleyfield.....	2	6	3,068	99	310	87	.....	48 44
Valleyfield to Lachine.....	1	186	21,841	2,502	1,056	212	6	155 63
Lachine to Montreal.....	1	329	64,031	17,364	782	337	..	544 92
Total.....	.....	709	183,869	31,275	3,586	2,380	8	2,932 11

S.—The quantity of Coal passed through the Welland Canal during a series of years from 1885 to 1897 inclusive, and the amount of Tolls collected thereon, is as follows :—

Year.	From Canadian Ports to Canadian Ports.	From Canadian Ports to Canadian Ports.	From United States Ports. to United States Ports.		From United States Ports to Canadian Ports.		Total Tons.	Amount of Tolls Paid — Rate 20 cents a ton.
	Up.	Down.	Up.	Down.	Up.	Down.		\$ cts.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.		
1885.....			193,442	4,974	10,321	31,350	240,087	48,017 40
1886.....			184,564	5,400	22,187	49,724	261,875	52,375 00
1887.....			81,617	1,163	26,775	25,968	135,523	27,104 60
1888.....			172,381	878	17,365	27,183	217,807	43,561 40
1889.....			226,352	1,124	12,036	25,931	265,443	53,188 60
1890.....	80		116,616	615	17,280	22,781	202,372	38,222 30
1891.....			185,190	1,382	17,374	20,698	224,644	44,928 20
1892.....			183,244	651	12,391	15,330	211,616	42,284 13
1893.....			204,704	2,123	8,325	17,944	233,096	46,619 20
1894.....			187,794	727	1,269	13,947	203,737	40,789 93
1895.....	4		148,887	603	1,565	7,807	158,866	31,773 05
1896.....	20	210	206,093	1,255	4,127	11,740	223,445	44,668 20
1897.....		4	165,143	.....	1,277	9,799	176,223	35,244 60

NOTE—Tolls on soft coal passed down the Welland Canal, during the season of 1890, were reduced from 20 to 10 cents a ton, per O.C. 11th May, 1890, for the season of 1890 only, the rate for 1891, 1892, 1893, 1894, 1895, 1896 and 1897 being 20 cents a ton for passage either eastward or westward.

T.—STATEMENT showing the quantity of Coal passed through the whole length of the St. Lawrence Canals during the seasons from 1885 to 1897, inclusive.

Year.	Quantity passed up Free of Tolls.	Quantity passed down to Montreal.	Total Quantity passed up and down.	Amount of tolls on Quantity passed down to Montreal.
	Tons.	Tons.	Tons.	\$ cts.
1885.....	5,035	122,829	127,864	18,424 35
1886.....	3,301	118,802	122,103	17,820 70
1887.....	7,579	121,618	129,197	18,242 70
1888.....	8,341	123,050	131,391	18,423 90
1889.....	5,360	124,290	129,650	18,604 90
1890.....	6,538	135,168	141,706	20,275 20
1891.....	7,951	141,701	149,652	21,255 15
1892.....	7,543	157,134	164,677	23,570 10
1893.....	2,285	147,139	149,424	22,070 85
1894.....	16,213	169,552	185,765	25,432 80
1895.....	.....	165,151	165,151	24,772 65
1896.....	689	161,551	162,240	24,232 65
1897.....	40	164,963	165,003	24,722 37

NOTE—Coal is allowed to pass free up the St. Lawrence Canals.



# Department of Railways and Canals.

U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, showing the Quantity to Montreal, the Quantity to Canadian Ports between Port Dalhousie and Cornwall, and the Quantity to United States Ports, Oswego, Ogdensburg, &c., on the south side of Lake Ontario, for the years 1886 to 1897 inclusive.

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1886.	Tons.	Tons.	Tons.
Ashes, pot and pearl.....	44	10	11
Apples.....	49		
Agricultural products, not enumerated, vegetable.....		1	1
Bricks.....			41
Cement and water lime.....			26
Coal.....		49,724	5,400
Corn.....	116,517	8,871	93,503
Flour.....	2,934		7,591
Furniture.....	6	15	21
Glass, all kinds.....			2
Horses.....	1		1
Hides and skins, &c.....			414
Iron, pig.....		617	43
do all other.....	15	12	1
Lard and lard oil.....	22	9	13
Meal, all kinds.....	125	18	13,201
Meats, other than pork.....	67	64	1
Marble.....		2	
Molasses.....	28	7	
Nails.....			4
Oats.....		41	4,790
Oil.....	6	28	6
Pease.....	608		
Pork.....	936	407	106
Paint.....	1	1	
Rags.....			13
Salt.....		29	1
Stone, for cutting.....		4,314	
do wrought.....		103	38
Seeds, all kinds.....	33	3	236
Sugar.....			3
Spirits, beer, &c.....	8	12	21
Tobacco, raw.....	25		
Tallow.....	1	2	1
Wheat.....	86,815	969	53,258
Wool.....			1,125
Merchandise, not enumerated.....	100	46	793
Barrels, empty.....	6	2	
Floats.....		20	
Lumber, sawn, in vessels.....	18,707	7,546	53,124
Masts, spars, &c.....		22	
Staves and heading, barrel.....		57	
do do pipe.....	332	339	
do do West India.....	287	444	
Shingles.....		12	463
Timber, square.....	16,740	44,335	
Woodenware.....	101	45	2
Total.....	244,514	118,127	234,254

A refund of 18 cents per ton was allowed on wheat, corn, oats, pease, barley and rye, passed down to Montreal, per O.C. 21st April, 1886.

U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1887.	Tons.	Tons.	Tons.
Ashes, pot and pearl .....	113		
Apples.....	33		
Agricultural products, not enumerated, vegetable. ....			2
Agricultural implements.....			9
Barley.....			1,709
Coal.....		25,968	1,163
Corn.....	24,609	6,898	83,431
Fish.....			2
Flour.....	6,140		11,780
Furniture.....	9	9	24
Horses.....	1	1	2
Hides, skins, &c.....			170
Iron, pig.....		1,137	
do all other.....		7	
Lard, and lard oil .....		6	14
Meal, all kinds .....	87	42	10,726
Meats, other than pork.....	29	15	18
Nails.....	1		
Oats.....			12,050
Oil.....	14	190	8
Oil cake.....	17		
Pease.....	362		
Pork.....	418	86	108
Stone, for cutting.....		3,531	
do wrought.....	12	543	
Seeds.....		4	44
Sugar.....	15		1
Spirits.....		99	63
Wheat.....	160,063	4,940	37,678
Wool.....			86
All other merchandise not enumerated. ....	72	123	468
Barrels, empty.....	88		24
Lumber, sawn.....	7,001	1,816	44,733
Staves and headings, barrel.....		27	
do pipe.....	184		
do West India.....	131	838	
Timber, square.....	14,390	21,351	
Woodenware and wood partly manufactured.....	45	1	2
Total.....	213,834	67,632	204,315

A refund of 18 cents per ton was allowed on wheat, corn, pease, barley and rye passed down to Montreal, per O.C. 21st March, 1887..

# Department of Railways and Canals.

## U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1888.	Tons.	Tons.	Tons.
Ashes, pot and pearl .. .. .	85		
Apples .. .. .		45	
Barley .. .. .			2
Cement and water lime .. .. .			4
Coal .. .. .		27,183	878
Corn .. .. .	66,443	25,469	102,974
Crockery and earthenware .. .. .		4	1
Flour .. .. .	3,865		8,563
Furniture .. .. .	2	1	30
Glass, all kinds .. .. .	3	2	
Hay, pressed .. .. .		20	
Horses .. .. .	2		
Hides and skins .. .. .			39
Iron, pig .. .. .		549	
do all other .. .. .	418	490	
Lard and lard oil .. .. .	54	12	18
Meal, all kinds .. .. .	100		11,598
Meats, other than pork .. .. .	39	6	14
Oats .. .. .			26,510
Oil .. .. .		3	
Pease .. .. .		54	
Pork .. .. .	265	61	19
Rags .. .. .			14
Rye .. .. .		632	179
Stone, for cutting .. .. .		6,535	
do wrought .. .. .		126	
Seeds, all kinds .. .. .	12	1	48
Steel .. .. .			3
Sugar .. .. .		2	4
Spirits .. .. .	3	2	151
Tallow .. .. .			1
Wheat .. .. .	93,915	14,365	39,999
Wool .. .. .			18
All other goods and merchandise not enumerated. ....	105	34	1,435
Barrels, empty .. .. .	40		133
Lumber, sawn .. .. .	5,174	4,515	45,818
Staves and headings, barrel .. .. .	15	7	
do pipe .. .. .	124		
do West Indies .. .. .	1,623	13	
do salt barrel .. .. .	1	1	
Shingles .. .. .			6
Timber, square, in vessels .. .. .	11,586	33,669	
Woodenware .. .. .	25		8
Total .. .. .	183,899	113,801	238,467

A refund of 18 cents per ton was allowed on wheat, corn, pease, barley and rye passed down Montreal, per O.C. 20th April, 1888.



U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1889.	Tons.	Tons.	Tons.
Ashes, pot and pearl. . . . .	107	5	
Coal. . . . .		25,931	1,124
Corn. . . . .	195,350	11,200	147,045
Crockery and earthenware . . . . .		1	1
Fish. . . . .		5	
Flour. . . . .	6,841		5,017
Furniture. . . . .		4	30
Horses . . . . .	2		1
Iron, pig. . . . .		613	
do all other. . . . .			520
Lard and lard oil. . . . .		5	19
Meal, all kinds. . . . .	148		17,224
Meats, other than pork. . . . .	32	2	3
Molasses. . . . .			88
Oats. . . . .	320		27,492
Oil, in barrels. . . . .	4	2	
Oil cake . . . . .	798		
Potatoes. . . . .			1
Pork . . . . .	1,220	114	21
Rye . . . . .	1,284	634	
Salt. . . . .		316	
Stone, for cutting . . . . .		6,784	
do wrought . . . . .		11	2
do not suitable for cutting . . . . .		375	1,681
Seeds, all kinds . . . . .	3		151
Spirits, beer, &c. . . . .	20	8	190
Tallow. . . . .			13
Wheat . . . . .	70,815	7,241	39,229
Wool. . . . .			452
Merchandise. . . . .	193	129	1,591
Barrels, empty. . . . .			173
Lumber, sawn. . . . .	6,118	4,669	71,055
Masts, spars, &c. . . . .		220	
Railway ties. . . . .		852	
Saw logs. . . . .			158
Staves and headings, barrel. . . . .		4	
do do pipe. . . . .	202	304	
do do West India. . . . .	68	559	
Shingles. . . . .			51
Split posts, &c. . . . .		17	
Timber, square . . . . .	9,302	70,579	240
Woodenware, &c. . . . .			2
Total. . . . .	292,827	130,584	313,574

A refund of 18 cents per ton was allowed on wheat, corn, pease, barley and rye, passed down to Montreal, per Order in Council 18th March, 1889.

# Department of Railways and Canals.

U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1890.	Tons.	Tons.	Tons.
Ashes.....	70		
All other products, animal.....	14		
do vegetable..	1		
Barley.....			6,519
Bricks.....			4
Coal.....		22,781	615
Corn.....	134,966	11,584	180,842
Fish.....	49		
Flour.....	3,065		9,204
Furniture..	1	1	21
Glass, all kinds.....	1		
Horses.....	3		1
Iron, all other.....			1
Kryolite.....		1,280	1,620
Lard and lard oil.....		5	30
Meal.....	222		20,482
Meats.....			15
Oats.....	479	73	27,030
Oil, in barrels.....	6		
Oil cake.....	2		
Paint.....			3
Pease.....			14
Pork.....	221	19	88
Potatoes.....			1
Rye.....	1,120	1	
Salt.....		701	
Stone, for cutting.....		5,761	
do wrought.....		639	18
Seeds, all kinds.....	2		135
Spirits, &c.....	26		228
Tallow.....	54		
Wheat.....	75,515	5,241	31,527
White lead.....			1
Merchandise.....	142	32	1,822
Barrels, empty.....			7
Firewood, in vessels.....		1,398	
Lumber, sawn, in vessels.....	3,195	3,767	47,590
do rafts.....	384		
Staves and headings, pipe.....		187	
do do West Indies.....		36	
Shingles.....			14
Square timber, in vessels.....		73,112	
do rafts.....		17,683	
Woodenware.....	1		1
Corn..... 16,033	219,539	144,301	327,833
Oats..... 400	16,433		*16,433
Total.....	235,972	144,301	311,400

\* This quantity of grain was transhipped at Ogdensburg and passed down the St. Lawrence canals to Montreal.

A refund of 18 cents Welland Canal tolls was allowed on wheat, Indian corn, pease, barley, rye (and oats for export), when shipped for Montreal or some port east of that point, per Orders in Council 26th February and 5th May, 1890.

U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian ports between Port Dalhousie and Cornwall.		Quantity passed down to United States ports.
		Tons.	Tons.	
1891.	Tons.	Tons.	Tons.	
Ashes.....	40			
Agricultural products.....	2			42
Barley.....				8,113
Corn.....	52,539	5,144		127,494
Coal.....		20,698		1,382
Flour.....	3,324			6,802
Fish.....				1
Furniture.....	2	2		7
Glass.....	1			1
Horses.....	2	2		3
Hay.....		21		
Iron, pig.....	371	128		
do all other.....		1,036		10
Lard and lard oil.....	100	16		10
Meal, all kinds.....	67			26,096
Meats, other than pork.....		1		2
Molasses.....		20		18
Oats.....				52,823
Oil.....				1
Pease.....	390			
Pork.....	201			73
Rags.....				60
Rye.....	64,978	969		
Seeds, all kinds.....	2			256
Salt.....		1,861		494
Stone for cutting.....		6,602		
do wrought.....		7		
Tobacco.....	1			
Tallow.....		9		8
Wheat.....	159,785	692		32,097
Staves, pipe.....		8		
Whisky and all other liquors.....	105	57		167
Wool.....				1,237
Merchandise.....	278	6		1,779
Kryolite.....		1,098		1,773
Lumber, in vessels.....	2,991	1,300		56,456
do in rafts.....	917			
Timber, square, in rafts.....	5,680	14,638		
Barrels.....				4
Corn.....	12,169	291,776	54,315	317,209
Wheat.....	5,648	17,817		*17,817
Total.....		309,593	54,315	299,392

\* This quantity of grain was transhipped at Ogdensburg and passed down the St. Lawrence Canals to Montreal.

A refund of 18 cents a ton, Welland Canal tolls, on wheat, Indian corn, pease, barley, rye and (for export) oats, originally shipped for Montreal or some port east of Montreal, per Order in Council, 25th March, 1891.



# Department of Railways and Canals.

## U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—Continued.

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian ports between Port Dalhousie and Cornwall.	Quantity passed down to United States ports.
1892.	Tons.	Tons.	Tons.
Ashes, pot and pearl. ....	17	2	
Apples. ....	54		
Barley . . . . .			6,433
Corn. ....	53,689	7,637	131,222
Coal . . . . .		14,839	651
Flour . . . . .	2,874		11,018
Fish. ....	9		
Furniture . . . . .	1		7
Hides and skins . . . . .	20		
Horses . . . . .	2		
Iron, railway. ....		100	
do all other. ....		765	1
Meal, all kinds. ....	16		31,724
Meats, other than pork. ....	94		29
Oats. ....			36,935
Oil . . . . .		7	
Pease. ....	524		
Potatoes. ....			1
Pork. ....			44
Rye . . . . .	9,119	273	
Salt . . . . .		865	
Seeds, all kinds . . . . .	75		50
Steel. ....			1
Stone for cutting. ....		1,264	
Sugar . . . . .			20
Wheat . . . . .	194,281	5,373	26,950
Whisky, beer, spirits, &c. ....	6	15	46
Wool. ....			70
Merchandise not enumerated. ....	36	13	1,304
Barrels, empty. ....	1		29
Lumber, sawn, in vessels . . . . .	1,678	150	83,403
Square timber. ....	440	42,768	440
Staves and headings, pipe. ....	8	80	
do West India. ....	200	76	
Shingles . . . . .			25
Total. ....	263,144	74,227	330,403
*Wheat. ....	+ 4,341	—4,341	
Total. ....	267,485	69,886	330,403

\*This quantity of wheat was taken from Kingston to Ogdensburg and stored in elevators, and subsequently transhipped to Montreal.

A refund of 18 cents a ton, Welland Canal tolls, was allowed on wheat, Indian corn, pease, barley, rye, oats, flax seed and buckwheat which passed down the whole length of the Welland and St. Lawrence Canals, to Montreal, or any port east of Montreal, and such products exported out of the country, and in such cases only.

U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1894.	Tons.	Tons.	Tons.
Ashes, pot and pearl.....	23		
Barley.....	600	1,110	16,751
Bricks.....		1,251	
Corn.....	278,564	5,752	156,776
Coal.....		17,944	2,123
Flour.....	5,514		6,588
Fish.....			5
Furniture.....			6
Horses.....	1	1	2
Iron, pig.....			100
do all other.....			2
Meal, all kinds.....		1,025	36,352
Meats, other than pork.....			1
Oats.....	9,761	1,090	20,313
Pork.....			52
Rye.....	3,669	1	1
Salt.....		286	
Seeds, all kinds.....			16
Wheat.....	209,212	17,602	29,117
Whisky, beer, &c.....	1		83
Wool.....			80
Merchandise not enumerated.....	4	2	1,693
Barrels, empty.....			9
Firewood (in rafts).....		15	
Lumber, sawn, in vessels.....	667	1,981	123,665
Shing es.....			13
Square timber.....		45,605	
Staves and headings, barrel.....		12	
do pipe.....		7	
do West India.....		53	
Total.....	508,016	93,737	393,748

There was no rebate allowed of the Welland Canal toll on grain passed down to Montreal during the season of navigation in 1893.

The tolls were, however, reduced by Order in Council of 13th February, 1893, as follows:—"For the season of 1893, the canal toll for the passage of the following food products: wheat, Indian corn, pease, barley, rye, oats, flaxseed and buckwheat, for passage eastward through the Welland Canal be ten cents per ton; and for passage eastward through the St. Lawrence Canals only, ten cents per ton, payment of the said toll of ten cents a ton for passage through the Welland Canal to entitle these products to free passage through the St. Lawrence Canals."

# Department of Railways and Canals.

## U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1894.	Tons.	Tons.	Tons.
Apples. ....	50		
Ashes. ....	19		
Barley. ....	258		28,095
Bricks. ....		552	
Coal. ....		13,818	727
Corn. ....	60,661	3,243	105,329
Dye woods and dye stuffs. ....		4	2
Fish. ....			5
Flour. ....	16,503	41	16,880
Furniture. ....	2	3	
Horses. ....	1	2	4
Iron, pig. ....	195	2,170	
do all other. ....	1	183	
Meals. ....	4		60,390
Nails. ....			57
Oats. ....	175	107	27,621
Oil cake. ....	29		
do in barrels. ....		27	
Pork. ....	717		56
Salt. ....		133	
Spirits, beer, &c. ....		3	
Sugar. ....			52
Wheat. ....	212,557	13,349	42,934
White lead. ....	16		
Wool. ....			1,484
Merchandise not enumerated. ....	314		2,889
Barrels, empty. ....		16	
Sawn lumber, in vessels. ....	683		86,545
Square timber do. ....		47,030	
Woodenware. ....	6		
Total. ....	292,191	80,681	373,070

There was no rebate allowed of the Welland Canal toll on grain passed down to Montreal during the season of navigation in 1894.

The tolls were, however, reduced by Order in Council of 16th April, 1894, as follows:—For the season of 1894, the canal tolls for the passage of the following food products: wheat, Indian corn, pease, barley, rye, oats, flaxseed and buckwheat, for passage eastward through the Welland Canal be ten cents per ton; and for passage eastward through the St. Lawrence Canals only, ten cents per ton, payment of the said toll of ten cents a ton for passage through the Welland Canal to entitle these products to free passage through the St. Lawrence Canals.”



U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States. Ports.
1895.	Tons.	Tons.	Tons.
Apples.....	28		
Ashes.....	34	15	
Barley.....	959		7,730
Bricks.....		651	
Coal.....		7,809	603
Corn.....	70,235	2,912	91,743
Flour.....	30,916	1,824	10,265
Furniture.....		12	2
Glass.....		1	
Horses.....	1	1	
Hides, skins, &c.....			8
Iron, railway.....			181
do pig.....	79	1,994	
do all other.....	1,766	1,408	214
Lard and lard oil.....			6
Meal all kinds.....	65		46,316
Meats other than pork.....			30
Molasses.....	100		
Oats.....	1,654	123	16,442
Oil, in barrels.....	6	41	30
Pork.....			87
Paint.....	2		
Salt.....		36	
Stone for cutting.....		430	
Seeds, all kinds.....			14
Steel.....	394		462
Sugar.....			59
Spirits, beer, &c.....	101	84	15
Tobacco.....		16	
Wheat.....	*158,643	29,061	17,908
Wool.....			1,536
Merchandise not enumerated.....	558	1,302	7,656
Barrels, empty.....	1		
Sawn lumber in vessels.....	1,117	492	43,286
Railway ties do.....			1,942
Shingles.....		19	
Square timber in vessels.....		63,715	500
Total.....	266,659	111,946	247,035

\*Of this amount 3,469 tons came down to Kingston in 1894—was stored there and taken to Montreal in 1895 and 245 tons came down to Ogdensburg in 1894, stored there and transhipped to Montreal in 1895.

# Department of Railways and Canals.

## U.—COMPARATIVE STATEMENT of the Quantity of Freight passed down the Welland Canal, &c.—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1896.	Tons.	Tons.	Tons.
All other (vegetable).....	29		
Apples.....	†1,263		
Ashes.....	94		
Barley.....	240		11,128
Cement and water lime.....	12		
Coal.....		11,742	1,255
Corn.....	182,330	19,688	118,426
Crockery.....	5		
Fish.....		2	
Flour.....	11,964	13,846	16,224
Furniture.....		3	
Glass.....	9	3	
Hay, pressed.....		563	
Hides, skins, &c.....			41
Horses.....	1	1	3
Iron, railway.....		1,192	
do pig.....	5	1,559	
do all other.....	2,020	1,725	
Lard and lard oil.....			1,348
Meal, all kinds.....		500	46,456
Molasses.....	167		
Oats.....	12,373	1,454	14,351
Oil, in barrels.....	23		1,005
Pease.....	3,020	10	
Pork.....	1		390
Rags.....	4		
Rye.....	8,323	647	
Salt.....		80	
Seeds, all kinds.....	20		78
Steel.....	542	11,317	498
Sugar.....	1		165
Tobacco.....		1	
Wheat.....	254,763	51,587	16,467
Wool.....		8	900
Merchandise, not enumerated.....	376	54	3,990
Barrels, empty.....			10
Firewood in vessels.....			165
Sawn lumber do.....	657	1,286	78,397
Shingles.....		94	40
Square timber in vessels.....		55,588	
do rafts.....	1,200		
Woodenware.....			12
Total.....	479,442	172,950	311,349

†523 tons of this quantity of apples paid full tolls by sections on the Welland Canal, and consequently does not appear on the Welland Through Statement.

\*Of this amount 5,290 tons came down to Kingston in 1895, was stored there, and transhipped to Montreal in 1896.

U.—COMPARATIVE STATEMENT of the Quantities of Freight passed down the Welland Canal—*Concluded.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports.
1897.	Tons.	Tons.	Tons.
Agricultural products, vegetable.....			32
Ashes .....	133		
Barley .....			14,173
Bricks .....		739	845
Clay, lime and sand.....	38	430	
Coal .....		9,803	
Corn .....	*264,396	11,103	115,689
Flax seed .....	3,293	169	
Flour.....	1,029	211	7,237
Furniture .....	1	5	
Glass.....	53	9	
Hay, pressed .....			301
Horses .....	1	1	3
Hides and skins, &c.....			23
Iron, railway.....		6,241	965
" pig.....		2,828	
" all other .....	7,564	6,143	
Lard and lard oil.....			1,444
Meal, all kinds .....		699	41,644
Molasses .....	9		
Oats .....	*6,847	3,046	15,233
Oil, in barrels.....	112	51	198
Pease.....	*2,078	3	
Pork.....			243
Rye.....	8,435	48	
Salt .....	216		
Stone for cutting.....		330	
Seeds, all kinds .....			299
Steel .....	375	4,680	
Sugar .....			31
Spirits, beer, &c.....	46		
Tobacco .....	51		
Wheat.....	*278,498	†39,057	12,661
Wool .....			197
Merchandise, not enumerated .....	1,214	347	3,591
Firewood, in vessels.....		12	
Hoops.....	257	8	
Lumber sawn, in vessels.....	478	1,158	69,710
Masts .....			403
" " rafts.....		5	
Railways ties, in vessels.....		999	
Split posts .....		4	
Timber, square .....	1,207	81,117	1,040
Staves and headings, salt barrel.....	4,716		
Woodenware.....			1
Total .....	581,047	169,246	285,963

\* Of this quantity of corn 573 tons came down to Ogdensburg and Prescott in 1896, were stored there and transhipped to Montreal in 1897.

\* Of this quantity of oats, 50 tons came down to Prescott in 1896 and passed down to Montreal in 1897 and 170 tons passed through on St. Catharines Reports; 136 tons of which passed down to Montreal.

\* Of this quantity of wheat 624 tons were transhipped and passed through on St. Catharines Reports.

\* Of this quantity of wheat 624 tons were transhipped and passed through on St. Catharine Reports, and 7,072 tons came down to Kingston and Prescott in 1896, and passed down to Montreal in 1897.

† Of this quantity, 1,079 tons were transhipped and passed through on St. Catharines Reports.



# Department of Railways and Canals.

U.—STATEMENT showing the quantity of Freight passed down the Welland Canal to Canadian Ports, &c.—*Continued.*

## RECAPITULATION.

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports on the south side of Lake Ontario.
1886.	Tons.	Tons.	Tons.
Barley .....			
Corn .....	116,517	8,871	93,503
Oats .....		41	4,790
Pease .....	608		
Rye .....			
Wheat .....	86,815	969	53,258
Total grain .....	203,940	9,881	151,551
Other articles .....	40,574	108,246	82,703
Total .....	244,514	118,127	234,254
1887.			
Barley .....			1,709
Corn .....	24,609	6,898	83,431
* Oats .....			12,050
Pease .....	362		
Rye .....			
Wheat .....	160,063	4,940	37,678
Total grain .....	185,034	11,838	134,868
Other articles .....	28,800	55,794	69,447
Total .....	213,834	67,632	204,315
1888.			
Barley .....			2
Corn .....	66,443	25,469	102,974
† Oats .....			26,510
Pease .....		54	
Rye .....		632	179
Wheat .....	93,915	14,365	39,999
Total grain .....	160,358	‡ 40,520	169,664
Other articles .....	23,541	73,281	68,803
Total .....	183,899	113,801	238,467
1889.			
Barley .....			
Corn .....	195,350	11,200	147,945
† Oats .....	320		27,492
Pease .....			
Rye .....	1,284	634	
Wheat .....	70,815	7,241	39,229
Total grain .....	267,769	19,075	213,766
Other articles .....	25,158	111,509	99,808
Total .....	292,927	130,584	313,574

\* There was no rebate on oats for 1887.

† There was no rebate on oats for 1888, or 1889.

‡ Owing to a break in the Cornwall Canal 14,921 tons of the above quantity of grain were transhipped to Montreal *via* Canadian Pacific and Grand Trunk Railways, and the refund of 18 cents per ton allowed.

U.—STATEMENT showing the quantity of Freight passed down the Welland Canal to Canadian Ports, &c.—*Continued.*

RECAPITULATION—*Continued.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports on the south side of Lake Ontario.
1890.	Tons.	Tons.	Tons.
Barley.....			6,519
Corn.....	150,999	11,584	180,842
Oats.....	879	73	27,030
Pease.....			14
Rye.....	1,120	1	
Wheat.....	75,515	5,241	31,527
Total grain.....	228,513	16,899	+245,932
Other articles.....	7,459	127,502	81,901
Total.....	235,972	144,301	327,833
1891.			
Barley.....			8,113
Corn.....	52,539	5,144	127,494
Oats.....			52,823
Pease.....	390		
Rye.....	64,978	969	
Wheat.....	159,785	692	32,097
Total grain.....	277,692	6,805	220,527
Transhipped at Ogdensburg to Montreal.....	+17,817		-17,817
Total.....	295,509		202,710
Other articles.....	14,084	47,510	96,682
Grand total.....	309,593	54,315	299,392
1892.			
Barley.....			6,433
Corn.....	53,689	7,637	131,222
Oats.....			36,935
Pease.....	524		
Rye.....	9,119	273	
Wheat.....	194,281	5,373	26,950
Total grain.....	257,613	13,283	201,540
Quantity taken to Ogdensburg and transhipped to Montreal.....	+ 4,341	4,341	
Total.....	261,954	8,942	201,540
Other articles.....	5,531	60,944	128,863
Total.....	267,485	69,886	330,403
1893.			
Barley.....	600	1,110	16,751
Corn.....	278,564	5,752	156,776
Oats.....	9,761	1,090	20,313
Pease.....			
Rye.....	3,669	1	1
Wheat.....	209,212	17,602	29,117
Total grain.....	501,806	25,555	222,958
Other articles.....	6,210	68,182	170,790
Total.....	508,016	93,737	393,748

† Of this quantity of grain, 16,433 tons were transhipped at Ogdensburg to Montreal.

‡ This quantity of wheat was taken from Kingston to Ogdensburg, stored in elevators and subsequently transhipped to Montreal.

# Department of Railways and Canals.

U.—STATEMENT showing the Quantity of Freight passed down the Welland Canal to Canadian Ports, &c.—*Concluded.*

## RECAPITULATION—*Concluded.*

Articles.	Quantity passed down to Montreal.	Quantity passed down to Canadian Ports between Port Dalhousie and Cornwall.	Quantity passed down to United States Ports on the south side of Lake Ontario.
1894.	Tons.	Tons.	Tons.
Barley .....	258		28,095
Corn.....	60,661	3,243	185,329
Oats.....	175	107	27,621
Pease .....			
Rye .....			
Wheat .....	212,557	13,349	42,934
Total grain .....	273,651	16,699	203,979
Other articles.....	18,540	63,982	169,091
Total .....	292,191	80,681	373,070
1895.			
Barley... ..	959		7,730
Corn.....	70,265	2,912	91,743
Oats.....	1,654	123	16,442
Rye.....			
Wheat .....	*158,643	29,061	17,908
Total grain .....	231,491	32,096	133,823
Other articles .....	35,168	79,850	113,212
Total .....	266,659	111,946	247,035
1896.			
Barley.....	240		11,128
Corn.....	182,330	19,688	118,426
Oats.....	12,373	1,454	14,351
Pease .....	3,020	10	
Rye.....	8,323	647	
Wheat .....	254,763	51,587	16,467
Total grain.....	+461,049	73,386	160,372
Other articles.....	18,393	99,564	150,977
Total.....	479,442	172,950	311,349
1897.			
Barley.....			14,173
Corn.....	264,396	11,103	115,689
Oats.....	6,847	3,046	15,233
Pease .....	2,078	3	
Rye.....	8,435	48	
Wheat .....	278,498	39,057	12,661
Total grain .....	+560,254	53,257	157,756
Other articles .....	20,793	115,989	128,207
Total .....	581,047	169,246	285,963

\*Of this amount, 3,469 tons came down to Kingston, in 1894 was stored there, and taken to Montreal in 1895, and 245 tons came down to Ogdensburg in 1894, was stored there and transhipped to Montreal in 1895.

†Of this amount, 5,290 tons came down to Kingston in 1895, was stored there, and transhipped to Montreal in 1896.

‡Of this quantity, 7,695 tons came down in 1896, and were transhipped to Montreal in 1897.



CANAL  
COMPARATIVE STATEMENT for years

	January.	February	March.	April.	May.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Welland Canal, 1896.....	10 00			6,793 42	31,815 72
do 1897 .....			11 98	9,217 52	20,735 71
Increase .....	10 00		11 98	2,424 10	11,080 01
Decrease .....					
St. Lawrence Canals, 1896.....	45 00			673 41	12,404 26
do 1897.....		150 00		374 61	11,955 97
Increase .....		150 00			
Decrease .....	45 00			298 80	448 29
Chambly Canal, 1896.....				3 71	3,867 66
do 1897.....				18 07	3,995 00
Increase .....				14 36	127 34
Decrease .....					
Ottawa Canals, 1896.....				214 53	5,594 19
do 1897.....				1,107 28	5,661 67
Increase .....				892 75	67 48
Decrease .....					
Rideau Canal, 1896.....					972 34
do 1897.....					580 11
Increase .....					
Decrease .....					392 23
St. Peter's Canal, 1896.....	6 72		1 24	111 15	346 90
do 1897.....	78		17 18	30 44	215 57
Increase .....			15 94		
Decrease .....	5 94			80 71	131 33
Trent Valley Canals, 1896 .....				37 39	129 87
do 1897.....			25	38 22	76 69
Increase .....			25	83	
Decrease .....					53 18
Murray Canal, 1896.....				10 76	65 33
do 1897.....				1 79	71 81
Increase .....					6 48
Decrease .....				8 97	
Sault Ste. Marie Canal, 1896.....					
do 1897.....					
Increase .....					
Decrease .....					
Total increase.....		150 00	28 17	2,943 56	
Total decrease .....	60 94				11,903 74

# Department of Railways and Canals.

## REVENUE.

ended 31st December, 1896 and 1897.

June.	July.	August.	September.	October.	November.	December.	Total.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
21,976 30	23,219 71	32,789 47	27,803 99	28,309 10	19,903 30	2,462 32	195,083 33
20,598 37	27,907 44	26,773 32	31,104 78	26,720 52	21,125 73	4,455 86	188,651 23
1,377 93	4,687 73	6,016 15	3,300 79	1,588 58	1,222 43	1,993 54	6,432 10
12,872 88	13,722 58	13,047 00	12,831 32	14,238 48	8,976 73	53 86	88,865 52
12,749 37	13,302 41	13,392 10	13,235 20	12,764 42	11,575 80	188 50	89,688 38
123 51	420 17	345 10	403 88	1,474 06	2,599 07	134 64	822 86
4,107 45	4,446 08	3,555 09	2,633 83	3 561 17	1,980 50	0 25	24,155 74
4,179 83	4,035 68	3,358 46	3,174 93	2,606 66	1,939 90		23,308 53
72 38	410 40	196 63	541 10	954 51	40 60	0 25	847 21
5,912 36	5,541 65	4,333 95	3,834 09	3,246 53	1,837 26		30,514 56
7,846 53	5,959 58	4,566 18	3,688 72	2,607 22	2,603 10		34,040 28
1,934 17	417 93	232 23	145 37	639 31	765 84		3,525 72
1,099 69	992 46	832 86	557 24	410 84	297 53		5,162 96
868 14	1,308 82	1,408 85	1,020 23	891 21	247 41	0 32	6,325 09
231 55	316 36	575 99	462 99	480 37	50 12	0 32	1,162 13
358 26	378 64	417 59	416 76	428 96	336 26	1,908 88	4,711 36
391 63	422 98	361 49	468 54	423 10	335 21	189 78	2,856 70
33 37	44 34	56 10	51 78	5 86	1 05	1,719 10	1,854 66
159 46	182 08	181 98	117 92	87 35	56 47		952 52
160 67	285 30	238 98	189 33	175 61	68 60		1,233 65
1 21	103 22	57 00	71 41	88 26	12 13		281 13
80 06	101 62	133 13	87 76	57 97	67 66	0 75	605 04
73 30	115 15	148 52	93 79	79 97	70 68		655 01
6 76	13 53	15 39	6 03	22 00	3 02	0 75	49 97
	10 00						10 00
	10 00						10 00
301 38	4,742 54	5,043 17	4,692 61	4,071 69	4,510 72	408 40	3,302 16

Total for year 1896..... 350,061 03  
Total for year 1897 ..... 346,758 87

RICHARD DEVLIN, *Compiler of Canal Statistics*

COMPARATIVE STATEMENT showing the quantity of Vegetable Food and Lumber passed through the Canals during the years ended 31st December, 1896 and 1897.

	VEGETABLE FOOD.							LUMBER.		TOTAL.
	FLOUR.	WHEAT.	CORN.	BARLEY.	OATS.	RYE.	BUCK- WHEAT.	ALL OTHERS.	Tons.	Tons.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Welland Canal, 1896.	42,425	320,563	320,444	11,365	28,178	9,409	.....	56,591	83,995	872,973
do 1897.	9,065	324,743	390,615	14,173	25,161	8,483	.....	44,674	72,270	889,184
Increase .....	.....	4,180	70,171	2,805	.....	.....	.....	.....	.....	16,211
Decrease.....	33,360	.....	.....	.....	3,017	926	.....	11,917	11,725	.....
St. Lawrence Canals, 1896.	15,605	267,845	200,971	3,925	31,535	9,795	4,118	51,197	41,644	626,635
do 1897.	3,951	322,937	272,541	4,800	58,169	22,832	6,537	48,365	32,796	767,928
Increase. ....	.....	55,092	71,570	875	26,634	13,037	2,419	.....	.....	141,293
Decrease .....	11,644	.....	.....	.....	.....	.....	.....	7,832	8,848	.....
Chambly Canal, 1896.	571	.....	.....	59	1,621	.....	.....	1,682	76,411	80,344
do 1897.	552	.....	.....	.....	2,666	.....	.....	313	53,838	57,369
Increase. ....	.....	.....	.....	.....	1,045	.....	.....	.....	.....	.....
Decrease .....	19	.....	.....	59	.....	.....	.....	1,369	22,573	22,975
Ottawa Canals, 1896.	10	275	.....	36	630	2	3	384	362,170	363,510
do 1897.	7	.....	.....	5	1,623	8	189	417	399,583	401,832
Increase. ....	.....	.....	.....	.....	993	6	186	33	37,413	38,322
Decrease .....	3	275	.....	31	.....	.....	.....	.....	.....	.....
Rideau Canal, 1896.	396	1,550	6	.....	20	4	101	266	28,700	31,013
do 1897.	518	625	155	6	448	5	153	150	32,029	34,089
Increase. ....	122	.....	149	6	428	1	52	.....	3,329	3,046
Decrease.....	.....	925	.....	.....	.....	.....	.....	116	.....	.....



Department of Railways and Canals.

St. Peter's Canal, 1896.....	2,533	68	25	39	1,256				2,534	6,332	8,865
do 1897.....	2,846									5,434	12,202
Increase.....											
Decrease.....	313	68	25	39	1,256				2,534	898	3,337
Trent Valley Canals, 1896.....		64									
do 1897.....	20	49			8				31	2,427	2,491
Increase.....										1,807	1,915
Decrease.....	20	15			8				31	620	576
Murray Canal, 1896.....			1	180		266	232		1,702	996	3,377
do 1897.....		243		65	43	340	70		1,268	443	2,472
Increase.....											
Decrease.....		243			43	74	162				
Sault Ste. Marie Canal, 1896.....	199,792	579,427	6,175	39,093	42,744	10,388			17,390	46,879	941,888
do *1897..	121,526	537,775	7,213	15,991	15,277	5,698			21,629	13,015	738,124
Increase ..											
Decrease ..	78,266	41,652	1,038	23,102	27,467	4,690			4,239	33,864	203,764
Total increase.....											
Total decrease.....	122,847	16,716	142,952	19,582	77	7,502	2,495		14,831	38,339	26,011
Total for Year 1896.....											2,931,126
do 1897.....											2,905,115

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

APPENDIX A.

No. (A) 1.—GENERAL STATEMENT showing the Quantity of each Article transported on the Welland Canal, and the Amount of Revenue collected during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, up.		Amount of Tolls, Down.		Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		\$	cts.	\$	cts.	
Ashes, pot and pearl																
Apples	15	36						97	15	133	133			26	60	26 60
Agricultural products not enumerated, vegetables	22	227								227	242			5	68	7 93
Agricultural products not enumerated, animal																
Agricultural implements	1															
Barley						14,173				14,173	14,173			1,417	30	1,417 30
Bricks	63	4				845		739	63	1,588	1,651			317	33	322 20
Bones																
Brimstone																
Buckwheat	31	384							31	384	41			38	40	40 11
Cement and water lime										718	718			99	85	99 85
Clay, lime and sand	3	4			165,143		1,277	718		9,803	176,226			33,284	08	35,244 68
Coal								221,334		390,615	390,615					39,061 50
Corn		224			169,057					4	4				10	0 10
Cattle		4														
Cotton (raw)	17								144		144			21	60	21 60
Crockery and earthenware					111											
Dye wood and dye stuffs																
Fish					55				55		55			8	25	8 25
Flax and hemp					1,041				1,041		1,041			156	15	156 15
Flour	40	548				7,237		1,240	40	9,025	9,065			1,709	15	1,709 90
Furniture	1							6	10	6	16			1	20	2 80
Gypsum																
Glass (all kinds)	45	60			1			2	47	62	109			12	40	19 45
Hay (pressed)						301				301	301			60	20	60 20
Hogs																
Horses	19	16			5			2	24	21	45			1	47	2 86

## Department of Railways and Canals.

Hides and skins, horns and hoofs.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</		
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No. (A) 1.—GENERAL STATEMENT showing the Quantity of each Article transported on the Welland Canal, &c.—Concluded.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.		Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		\$	cts.	\$	cts.
Barrels, empty	21								21		21	3	98		3 98
Boat knees															
Floats	174	13,293	1,155	405					1,329	13,698	15,027	19	24	588	607 41
Firewood, in vessels															
do in rafts		144						121		265	265			66	66 25
Hoops															
Hoop poles															
Lumber, sawn, in vessels		1,206		1,430		68,280		1,354		72,270	72,270			12,940	12,940 30
do in rafts															
Masts, spars and telegraph poles, in vessels						403				403	403			60	60 45
Masts, spars and telegraph poles, in rafts		14								14	14			2	2 58
Railway ties, in vessels		999								999	999			159	159 61
do in rafts	47								47		47	1	32		1 32
Saw logs	739	1,518	175	2,100					914	3,618	4,532	34	94	128	163 15
Staves and headings, barrel do pipe		1,845						3,046		4,891	4,891			226	226 26
do West India															
Staves, salt barrel															
Shingles															
Split posts and fence rails, in vessels		4								4	4			1	1 60
Split posts and fence rails, in rafts															
Timber, square, in vessels		8,252				1,040		74,073		83,365	83,365			12,497	12,497 99
do in rafts															
Traverses															
Woodenware and wood partly manufactured	2				23	1			25	1	26	10	00	40	10 40
Total freight paying tolls	5,417	175,480	2,132	4,518	210,831	353,863	1,277	516,232	219,657	1,050,093	1,269,750	40,579	92	123,558	164,138 47

Department of Railways and Canals.

Articles having paid full Tolls on the St. Lawrence Canals, free :—									
Agricultural products vegetable.	4	1	4	4	4	4	4	4	4
Ashes.	1	67	1	1	1	1	1	1	1
Bricks.	3	442	70	70	70	70	70	70	70
Cement and water lime.	395	4	837	837	837	837	837	837	837
Clay, lime and sand.	4	4	4	4	4	4	4	4	4
Crockery and earthenware.	4	10	10	10	10	10	10	10	10
Fish.	2	782	2	2	2	2	2	2	2
Furniture.	17	6	799	799	799	799	799	799	799
Glass, all kinds.	48	511	6	6	6	6	6	6	6
Iron, Pig.	2	127	129	129	129	129	129	129	129
do all other.	3	9	12	12	12	12	12	12	12
Nails.	5	15	20	20	20	20	20	20	20
Oils.	19	25	25	25	25	25	25	25	25
Paint.	3	118	121	121	121	121	121	121	121
Pitch and tar.	56	193	249	249	249	249	249	249	249
Salt.	25	62	62	62	62	62	62	62	62
Seeds, all kinds.	115	196	25	25	25	25	25	25	25
Soda, ash.	3	356	311	311	311	311	311	311	311
Stone, for cutting.	4	89	93	93	93	93	93	93	93
do wrought.	80	24	5	5	5	5	5	5	5
Sugar.	275	436	104	104	104	104	104	104	104
Tin.	115	196	25	25	25	25	25	25	25
Whisky, &c.	3	356	311	311	311	311	311	311	311
White lead.	4	89	93	93	93	93	93	93	93
Whiting.	80	24	5	5	5	5	5	5	5
Merchandise.	275	436	104	104	104	104	104	104	104
Grand total freight.	6,478	175,480	5,613	4,518	210,831	353,863	1,277	516,232	224,199
Total tolls on vessels.									
do passengers.									
do free goods.									
Total tolls.									
Fines.									
* Damages.									
Harbour Dues.									
Total revenue, exclusive of hydraulic rents...									
Total tolls on vessels.									
do passengers.									
do free goods.									
Total tolls.									
Fines.									
* Damages.									
Harbour Dues.									
Total revenue, exclusive of hydraulic rents...									

APPENDIX A.—Continued.

No. A (2).—GENERAL STATEMENT showing the Quantity of each Article of Through Freight transported on the Welland Canal and the Amount of Tolls collected during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.		Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		\$	cts.	\$	cts.
Ashes, pot and pearl.....		36						97		133	133				
Apples.....	15								15		15		26	60	26 60
Agricultural products not enumerated, vegetables..	18		2						20	32	52		3	00	2 25
Agricultural products not enumerated, animal..															
Agricultural implements..	1								1		1		0	15	0 15
Barley.....					14,173				14,173		14,173		1,417	30	1,417 30
Bricks.....	28				845		739		28	1,584	1,612		316	80	321 00
Bones.....															
Brimstone.....															
Buckwheat.....															
Cement and water lime...															
Clay, lime and sand.....															
Coal.....		4			165,143		1,277			468	468		93	60	93 60
Corn.....		224					9,799		166,420	9,803	176,223		33,284	00	35,244 60
Cattle.....					169,057		221,334		390,615	390,615	390,615		39,061	50	39,061 50
Cotton (raw).....															
Crockery and earthenware.	17		16						144		144		21	60	21 60
Dye wood and dye stuffs.															
Fish.....					55				55		55		8	25	8 25
Flax and hemp.....					1,041				1,041		1,041		156	15	156 15
Flour.....					7,237		1,240		8,477	6	8,477		1,695	40	1,659 40
Furniture.....			9				6		9		15		1	35	2 55
Gypsum.....															
Glass (all kinds).....	45	60	1				2		47	62	109		7	05	19 45
Hay (pressed).....					301					301	301		60	20	60 20
Hogs.....															
Horses.....	2				3		2		7	5	12		1	05	2 05





No. (A) 2.—GENERAL STATEMENT showing the Quantity of each Article of Through Freight transported on the Welland Canal, &c.—*Concluded.*

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.	Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		\$ cts.	\$ cts.	\$ cts.
Barrels, empty.....	21								21		21	3 98		3 98
Boat knees.....														
Floats.....														
Firewood, in vessels. ....		12								12			0 80	0 80
do rafts.....														
Hoops.....		144						121		265			66 25	66 25
Hop poles.....														
Lumber, sawn, in vessels..		282		1,430		68,280		1,354		71,346			12,836 42	12,836 42
do do rafts.....														
Masts, spars and telegraph poles, in vessels.....						403				403			60 45	60 45
Masts, spars and telegraph poles, in rafts.....		5							5		5		1 00	1 00
Railway ties, in vessels.....		999							999		999		159 61	159 61
do rafts.....														
Saw logs.....														
Staves and headings, barrel do pipe.....														
do do West India.....														
Staves, salt barrel.....		1,670						3,046		4,716			223 46	223 46
Shingles.....														
Split posts and fence rails, in vessels.....		4							4		4		1 60	1 60
Split posts and fence rails, in rafts.....														
Timber, square, in vessels..		8,251				1,040		74,073		83,364			12,497 74	12,497 74
do do rafts.....														
Traverses.....														
Woodenware and wood partly manufactured .....	2				23	1			25	1	26	10 60	40	10 40
Total through freight paying tolls.....	840	154,835	802	1,778	210,831	353,863	1,277	515,982	213,750	1,026,458	1,240,208	40,390 58	122,423 23	162,813 81

## Department of Railways and Canals.

Articles having paid full tolls on the St. Lawrence Canals, free:—																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.



APPENDIX A.—Continued.

No. (A) 3.—GENERAL STATEMENT showing the Quantity of each Article of Way Freight transported on the Welland Canal, and the Amount of Tolls collected during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.	Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.				
Ashes, pot and pearl														
Apples		227								227	227		5 68	5 68
Agricultural products not enumerated, vegetables...	4								4		4	0 08		0 08
Agricultural products not enumerated, animal														
Agricultural implements.														
Barley.														
Bricks.	35	1							35	4	39	0 67	0 53	1 20
Bones														
Brimstone														
Buckwheat.														
Cement and water lime	31	384							31	384	415	1 71	38 40	40 11
Clay, lime and sand.							250			250	250		6 25	6 25
Coal.	3								3		3	0 08		0 08
Corn														
Cattle		4								4	4		0 10	0 10
Cotton (raw)														
Crockery and earthenware.														
Dye wood and dye stuffs														
Fish														
Flax and hemp.														
Flour	40	548							40	548	588	75	13 75	14 50
Furniture.	1								1		1	25		0 25
Gypsum														
Glass (all kinds).														
Hay (pressed)														
Hogs														
Horses	17	16							17	16	33	34	0 47	0 81



No. (A) 3.—GENERAL STATEMENT showing the Quantity of each Article of Way Freight transported on the Welland Canal, &c.—*Concl'd.*

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.	Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.				
Barrels, empty.....														\$ cts.
Boat knees.....														
Floats.....														
Firewood in vessels.....	174	13,281				405			1,329	13,686	15,015	19 24	587 37	606 61
do in rafts.....														
Hoops.....														
Hop poles.....														
Lumber, sawn, in vessels.....		924								924	924		103 88	103 88
do in rafts.....														
Masts, spars, and telegraph poles, in vessels.....														
Masts, spars, and telegraph poles, in rafts.....		9								9	9		1 58	1 58
Railway ties, in vessels.....														
do in rafts.....														
Saw logs.....	739	1,518				2,100			914	3,618	4,532	34 94	128 21	163 15
Staves and headings, barrel do pipe do West India do salt barrel.....														
Shingles.....		175								175	175		2 80	2 80
Split posts and fence rails, in vessels.....														
Split posts and fence rails, in rafts.....														
Timber, square, in vessels.....		1								1	1		25	0 25
do in rafts.....	47								47		47	1 32		1 32
Traverses.....														



## Department of Railways and Canals.

Woodenware and wood partly manufactured . . . . .	4,577	20,645	1,330	2,740	250	5,907	23,635	29,542	189 34	1,135 32	1,324 66
Total way freight paying tolls . . . . .											
Total way tolls on vessels . . . . .											
do passengers . . . . .											
Total way tolls . . . . .											
									282 55	322 58	605 13
									157 25	166 90	324 15
									629 14	1,624 80	2,253 94

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*



# Department of Railways and Canals.

Iron (railway).....	197	181	6	197	184	381	29 48	7 28	36 76
do (pig).....	930	871	576	936	871	1,807	86 87	130 54	217 41
do (all other).....	6,154	1,918	576	8,296	1,965	10,264	734 48	91 70	826 18
do (ore).....									
Kryolite, chemical ore and other ore, except iron.....									
Lard and lard oil.....	38	162		38	162	200	4 53	20 95	25 48
Meal, all kinds.....	81	484		81	484	565	4 82	37 76	42 58
Meats, other than pork.....	5			5		5	0 45		0 45
Marble.....	2			2		2	0 20		0 20
Manilla.....	14			14		14	2 80		2 80
Molasses.....	1,262	142		2,062		2,204	138 13	7 10	145 23
Nails.....	717	594	128	845		1,439	164 86	30 60	195 46
Oats.....	1,383	49,939		1,383	49,939	51,322	34 69	1,985 83	2,020 52
Oil (in barrels).....	462	421	10	517	421	938	85 09	69 65	154 74
Oil cake.....	2	38		2	38	40	0 12	2 89	3 01
Pease.....	404	36,509		404	36,509	36,913	10 11	1,738 49	1,748 60
Potatoes.....		20			20	20		1 46	1 46
Pork.....	231	141		231	141	372	23 06	14 77	37 83
Paint.....	219	121	17	293	131	424	48 49	9 55	58 04
Pitch and tar.....	78	16	1	264	16	280	24 66	0 80	25 46
Rags.....	128	65	6	152	109	261	19 78	18 60	38 38
Rye.....		14,397			14,397	14,397		750 96	750 96
Flax seed.....									
Rosin.....	10	17		2,079	17	2,096	126 69	0 85	127 54
Salt.....	2,897	53	25	2,938	53	2,991	341 64	2 00	343 64
Stone intended for cutting do wrought.....	170		62	496		496	35 92		35 92
do not suitable for cut- ting, unwrought.....	345	4		492	4	496	28 35	0 20	28 55
Seeds, all kinds.....	942	76		942	76	1,018	18 60	1 50	20 10
Sheep.....	798	310	121	919	310	1,229	69 96	25 62	95 58
Soda ash.....	696	11	193		199	199		14 98	14 98
Steel.....	381	183		919	11	930	178 26	0 55	178 81
Sugar.....	4,441	65	356	381	1,325	1,706	53 01	103 83	156 84
Spirits, beer, &c.....	321	101	65	4,797	65	4,862	930 65	3 40	934 05
Tobacco (raw).....				386	101	487	63 59	18 40	81 99
Tallow.....	30	17							
Tin.....	904	12	356	30	17	47	3 72	2 33	6 05
Turpentine.....	1	18		1,260	12	1,272	250 60	1 05	251 65
Wheat.....	924	40,118		64	18	82	3 25	0 90	4 15
White lead.....	109		5	924	43,515	44,439	23 11	1,937 45	1,960 56
Whiting.....	403		24	114		114	22 44		22 44
Wool.....		31		427		427	85 15		85 15
All other goods and mer- chandise not enumerated.....					31	31		4 65	4 65
Bark.....	6,353	3,216	574	7,522	3,696	11,218	1,117 05	577 63	1,694 68
Barrels, empty.....	90	32	1	91	32	123	9 37	2 87	12 24
Boat knees.....									
Floats.....	70	2,325		70	2,325	2,395	1 58	40 39	41 97



No. (A) 4.—STATEMENT showing the Quantity of each Article transported on the St. Lawrence Canals, &c.—*Concluded.*

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.	Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.				
Firewood, in vessels.....	5,031	6,767							5,031	6,767	11,798	\$ 83 85	\$ 130 41	\$ 214 26
do in rafts.....		102								102	102		2 13	2 13
Hoops.....														
Hop poles.....		17								17	17		1 00	1 00
Lumber, sawn, in vessels.....	16,097	14,141	250	247				337	16,347	14,725	31,072	407 26	898 75	1,306 01
do in rafts.....	7	656							7	656	663	0 30	29 49	29 79
Masts, spars and telegraph poles, in vessels.....	100	14,821							100	14,821	14,921	2 50	369 70	372 20
Masts, spars and telegraph poles, in rafts.....														
Railway ties, in vessels.....	35								35		35	0 69		0 69
do in rafts.....														
Saw logs.....		15,189								15,189	15,189		347 12	347 12
Staves and headings, barrel do pipe.....														
do W. India.....														
Staves, salt barrel.....	1	9							1	9	10	0 19	1 98	2 17
Shingles.....	2								2		2	0 20		0 20
Split posts and fence rails, in vessels.....														
Split posts and fence rails, in rafts.....	1,000	670							1,000	670	1,670	35 63	8 50	44 13
Timber, square, in vessels.....	588	5,435							588	5,435	6,023	15 70	188 25	203 95
do in rafts.....		2,319								2,319	2,319		14 40	14 40
Traverses.....														
Woodenware and wood partly manufactured.....	62	4							62	4	66	20 70	0 70	21 40
Total freight paying tolls.	84,692	271,491	4,117	1,262	128	759	7,799	162,426	96,736	435,938	532,674	7,422 02	38,347 23	45,769 25
<i>Free articles having paid full tolls on the Welland Canal:</i>														
Ashes.....		46						87		133	133			
Clay, lime and sand.....								38		38	38			
Corn.....		197,318						70,265		267,583	267,583			
Flax Seed.....		2,453						840		3,293	3,293			
Flour.....		221						808		10,029	10,029			
Furniture.....								1		1	1			
Glass.....		53								53	53			

## Department of Railways and Canals.

[illegible]

\*Amount of damages not included in above, \$398.03.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

APPENDIX A—Continued.

No. (A) 5.—GENERAL STATEMENT showing the Quantity of each Article of Through Freight transported on the St. Lawrence Canals and the Amount of Tolls collected during the Season of Navigation of 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.		Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		\$	cts.	\$	cts.
Ashes, pot and pearl . . . . .		30							1	30	31	0	20	6	20
Apples.....	11	3,661							11	3,661	3,672	1	65	549	15
Agricultural products, not enumerated, vegetables..	228	1,006							228	1,006	1,234	34	50	150	90
Agricultural products, not enumerated, animal. . . . .	5	1,543						1,159	5	2,702	2,707	0	75	405	30
Agricultural implements..															
Barley.....		3,524								3,524	3,524			352	40
Bricks.....	385	87	120				8		545	95	600	75	75	14	25
Bones.....		2								2	2			0	30
Brinestone.....															
Buckwheat.....		1,059								1,059	1,059			105	90
Cement and water lime . . . . .	1,907	5	553						2,460	5	2,465	369	00	0	75
Clay, lime and sand. . . . .	74	581	4						78	581	659	11	70	75	90
Coal.....		22,045					142,918			104,963	164,963			24,722	37
Corn.....		1,405					2,174			3,579	3,579			357	90
Cattle.....															
Cotton (raw).....															
Crockery and earthenware.	48	5							48	5	53	9	60	1	00
Dye wood and dye stuffs..	18	3							18	3	21	3	60	0	60
Fish.....	36		3						39		39	5	85		5
Flax and hemp.....		67								67	67			6	70
Flour.....		1,361								1,361	1,361			204	15
Furniture.....	241	610	3						244	610	854	48	80	122	00
Gypsum.....															
Glass (all kinds).....	953	27	657						1,610	27	1,637	322	00	5	40
Hay (pressed).....		70								70	70			10	50
Hogs.....															
Horses.....	3	53							3	53	56	0	45	7	95
															8



# Department of Railways and Canals.

## Hides and skins, horns and

	6	8	6	8	14	0 90	1 20	2 10
Ice.....								
Iron, railway.....	196				199	29 40	0 45	29 85
do pig.....	448	870	3	870	1,324	68 10	130 50	198 60
do all other.....	2,879	199		109	3,564	518 25	16 35	534 60
do ore.....								
Kryolite chemical ore and other ore, except iron.....								
Lard and lard oil.....	18	131		131	149	2 70	19 65	22 35
Meal, all kinds.....		149		149			22 35	22 35
Meats, other than pork.....								
Marble.....								
Manilla.....	14				14	2 80		2 80
Molasses.....	19				19	3 80		3 80
Nails.....	540	6			674	133 60	1 20	134 80
Oats.....		9,463		9,463	9,463		946 40	946 40
Oil (in barrels).....	262	324		324	596	54 40	64 80	119 20
Oil cake.....								
Pease.....		10,923		10,923	10,923		1,092 45	1,092 45
Potatoes.....		2		2	2		0 30	0 30
Pork.....	8	84		84	92	1 20	12 60	13 80
Paint.....	180	10	10	20	217	39 40	4 40	43 40
Pitch and tar.....	66				67	13 40		13 40
Rags.....	47	55		55	108	10 60	11 00	21 60
Rye.....		5,213		5,213	5,213		521 30	521 30
Flax seed.....								
Rosin.....								
Salt.....	1,220							
Stone, intended for cutting do wrought.....	25	62		62	1,245	186 75		186 75
do not suitable for cut- ting, unwrought.....		25		25		9 30		9 30
Seeds, all kinds.....	189	124		124	434	46 50	18 60	65 10
Sheep.....								
Soda ash.....	682							
Steel.....	342	69		875	875	175 00		175 00
Sugar.....	3,745	1	47	342	458	51 30	17 40	68 70
Spirits, beer, &c.....	115	89		4,101	4,102	820 20	0 20	820 40
Tobacco (raw).....				180	269	36 00	17 80	53 80
Tallow.....	23	15						
Tin.....	864	3		23	38	3 45	2 95	5 70
Turpentine.....				1,220	1,223	244 00	0 30	244 60
Wheat.....								
White lead.....	91		3,397		11,244		1,124 40	1,124 40
Whiting.....	396			96	96	19 20		19 20
Wool.....				420	420	84 00		84 00
All other goods and mer- chandise, not enumerated.....					31		4 65	4 65
Bark.....	3,274	2,295	16	3,843	6,154	768 60	462 20	1,230 80

No. (A) 5.—GENERAL STATEMENT showing the Quantity of each Article of Through Freight transported on the St. Lawrence Canals, &c.—*Concluded.*

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.		Amount of Tolls, Down.		Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		\$	cts.	\$	cts.	
Barrels, empty.....	26	7	1						27	7	34	4	80	1	32	6 12
Boat knees.....																
Floats.....																
Firewood, in vessels.....																
do rafts.....																
Hoops.....																
Hop poles.....																
Lumber, sawn, in vessels.....	51	7,475	250				337		301	7,812	8,113	27	00	699	87	726 87
do rafts.....																
Masts, spars and telegraph poles, in vessels.....																
Masts, spars and telegraph poles, in rafts.....																
Railway ties, in vessels.....																
do rafts.....																
Saw-logs.....																
Staves and headings, barrel do pipe.....																
do do West India.....																
Staves, salt barrel.....		2								2	2			0	96	0 96
Shingles.....																
Split posts and fence rails, in vessels.....																
Split posts and fence rails, in rafts.....		73								73	73			7	25	7 25
Timber, square, in vessels.....																
do rafts.....																
Traverses.....																
Woodenware, and wood partly manufactured.....	44								44		44	17	60			17 60
Total through freight paying tolls.....	19,679	82,522	4,112				150,069		23,791	232,591	256,382	4,261	10	32,301	47	36,562 57

# Department of Railways and Canals.

Free articles having paid full tolls on the Welland Canal:—

10—7\*\*\*\*\*

Ashes.....	46				87	133	133			
Clay, lime and sand.....					38	38	38			
Corn.....	195,041				69,355	264,396	264,396			
Flax seed.....	2,453				840	3,293	3,293			
Flour.....	221				808	1,029	1,029			
Furniture.....					1	1	1			
Glass.....	53					53	53			
Horses.....					1	1	1			
Iron, (all other).....	2,753				4,771	7,564	7,564			
Merchandise.....	853				361	1,214	1,214			
Molasses.....					9	9	9			
Oats.....	6,422				425	6,847	6,847			
Oils.....					112	112	112			
Pease.....	2,078					2,078	2,078			
Rye.....	7,908				527	8,435	8,435			
Salt.....					216	216	216			
Steel.....	336				39	375	375			
Tobacco.....	19				32	51	51			
Wheat.....	244,357				33,594	278,498	278,498			
Whisky.....	26				20	46	46			
Hoops.....	159				98	257	257			
Lumber, sawn, in vessels.....	132				346	478	478			
Staves, &c., barrels.....	1,667				3,049	4,716	4,716			
Timber, square, in rafts.....	1,207					1,207	1,207			
Coal, free per Order in Council.....	40									
Grand total through freight.....	19,719	548,293	4,112	547	264,798	23,831	813,638	873,469		
Total through tolls on vessels.....										8,507 84
do passengers.....										330 40
Total through free goods.....										17,131 52
Total through tolls ..										1,611 70
Total through tolls ..										55,305 79

RICHARD DEVLIN,  
Compiler of Canal Statistics.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.



APPENDIX A.—Continued.

No. (A) 6.—GENERAL STATEMENT showing the Quantity of each Article of Way Freight transported on the St. Lawrence Canals, and the Amount of Tolls collected during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.		Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		\$ cts.	\$ cts.		
Ashes, pot and pearl	8	109							8	109	117	0 69	6 19		6 88
Apples	141	3							141	3	144	8 74	0 23		8 97
Agricultural products not enumerated, vegetables	532	293							533	514	1,047	24 40	34 47		58 87
Agricultural products not enumerated, animal	56	5					1		56	5	61	7 76	0 50		8 26
Agricultural implements		1,356								1,356	1,356		33 93		33 93
Barley	6,208						31		6,239		6,239	250 04			250 04
Bricks		22								262	262		21 30		21 30
Bones															
Brimstone	768								768		768	64 81			64 81
Buckwheat	49	5,429							49	5,429	5,478	1 24	136 57		137 81
Cement and water lime	4,387	143							4,387	363	4,750	247 71	21 89		269 60
Clay, lime and sand	10,211	11,023			220				12,221	11,826	24,047	456 53	509 89		966 42
Coal		349			108					11,234	11,234		699 95		699 95
Corn	699	568							699	680	1,379	17 55	25 55		43 10
Cattle	27	303							27	303	330	160	21 39		22 99
Cotton (raw)	2	4							2	4	6	0 15	0 03		0 45
Crockery and earthenware	38								38		38	6 05			6 05
Dye wood and dye stuffs	6								33		33	1 95			1 95
Fish	68	30							68	30	98	3 23	1 15		4 38
Flax and hemp															
Flour	891	670							891	670	1,561	54 83	27 80		82 63
Furniture	85	382							85	382	467	11 00	21 03		32 03
Gypsum	1,098	2							1,098	2	1,100	13 74	0 12		13 86
Glass (all kinds)	59	30							59	30	89	863	2 15		10 78
Hay (pressed)	148	382							148	382	530	572	17 71		23 43
Hogs		4								4	4		0 31		0 31
Horses	181	295							181	295	476	832	14 22		22 54

# Department of Railways and Canals.

Hides and skins, horns and

Ice.....	1	181	1	181	182	0 08	6 83	6 91
Iron, railway.....	482	1	482	1	483	18 77	0 04	18 81
do pig.....	3,275	1,809	4,844	1,856	6,700	216 2	75 35	291 58
do all other.....								
do ore.....								
Kryolite, chemical ore and other ore, except iron.....	20	31	20	31	51	1 88	1 30	3 13
Lard and lard oil.....	81	335	81	335	416	4 82	15 41	20 23
Meal, all kinds.....	5		5		5	0 45		0 45
Meats, other than pork.....	2		2		2	0 20		0 20
Marble.....								
Manilla.....								
Molasses.....	1,243	142	2,043	142	2,185	134 33	7 10	141 43
Nails.....	177	588	177	588	765	31 26	29 40	60 66
Oats.....	1,383	40,476	1,383	40,476	41,859	34 69	1039 43	1074 01
Oil (in barrels).....	200	97	245	97	342	30 69	4 85	35 54
Oil cake.....	2	38	2	38	40	0 12	2 89	3 01
Pease.....	404	25,586	404	25,586	25,990	10 11	646 04	656 15
Potatoes.....		18		18	18		1 16	1 16
Pork.....	223	57	223	57	280	21 86	2 17	24 03
Paint.....	39	111	96	111	207	9 09	5 55	14 64
Pitch and tar.....	12	16	197	16	213	1 126	0 80	12 06
Rags.....	81	10	99	54	153	9 18	7 60	16 78
Rye.....		9,184		9,184	9,184		229 66	229 66
Flax seed.....								
Rosin.....	10	17		17	2,096	126 69	0 85	127 54
Salt.....	1,677	53	2,079	53	1,746	154 89	2 00	156 89
Stone, intended for cutting, do wrought.....	170		1,693		434	26 62		26 62
do not suitable for cut- ting, unwrought.....	320	4	467	4	471	23 35	0 20	23 55
Seeds, all kinds.....	942	76	942	76	1,018	18 60	1 50	20 10
Sheep.....	609	186	609	186	795	23 46	7 02	30 48
Soda ash.....	14	11		11	199		14 98	14 98
Steel.....	39	114	44	11	55	3 26	0 55	3 81
Sugar.....	696	64	39	1,209	1,248	1 71	86 43	88 14
Spirits, beer, &c.....	206	12	696	64	760	110 45	3 20	113 65
Tobacco (raw).....			206	12	218	27 59	0 60	28 19
Tallow.....	7	2						
Tin.....	40	9	7	2	9	0 27	0 08	0 35
Turpentine.....	1	18	40	9	49	6 60	0 45	7 05
Wheat.....	924	32,271	64	18	82	3 25	0 90	4 15
White lead.....	18		924	32,271	33,195	23 11	813 05	836 16
Whiting.....	7		18		18	3 24		3 24
Wool.....			7		7	1 15		1 15
All other goods and mer- chandise not enumerated. Park.....	3,079	921	3,679	1,385	5,064	348 45	115 43	463 88

No. (A) 6.—GENERAL STATEMENT showing the Quantity of each Article of Way Freight transported on the St. Lawrence Canals, &c.—*Concluded.*

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls, Up.	Amount of Tolls, Down.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.				
Barrels, empty.....	64	25							64	25	89	4 57	1 55	6 12
Boat knees.....														
Floats.....	70	2,325							70	2,325	2,395	1 58	40 39	41 97
Firewood, in vessels.....	5,031	6,767							5,031	6,767	11,798	83 85	130 41	214 26
do in rafts.....		102								102	102		2 13	2 13
Hoops.....														
Hop poles.....		17								17	17		1 00	1 00
Lumber, sawn, in vessels.....	16,046	6,666							16,046	6,913	22,959	380 26	198 88	579 14
do in rafts.....	7	656							7	656	663	30	29 49	29 79
Masts, spars, and telegraph poles, in vessels.....														
Masts, spars, and telegraph poles, in rafts.....														
Railway ties, in vessels.....	100	14,821							100	14,821	14,921	2 50	369 70	372 20
do in rafts.....	35								35		35	69		0 69
Saw logs.....		15,189								15,189	15,189		347 12	347 12
Staves and headings, barrel do do pipe.....														
do do W. India.....														
Staves, salt barrel.....	1	7							1	7	8	0 19	1 02	1 21
Shingles.....														
Split posts and fence rails, in vessels.....	2								2		2	0 20		0 20
Split posts and fence rails, in rafts.....														
Timber, square, in vessels.....	1,000	670							1,000	670	1,670	35 63	8 50	44 13
do in rafts.....	588	5,362							588	5,362	5,950	15 70	181 00	196 70
Traverses.....		2,319								2,319	2,319		14 40	14 40



## Department of Railways and Canals.

	18	4	5	1,262	128	759	7,799	12,357	18	4	22	3 10	0 70	3 80
Woodenware and wood partly manufactured....	65,013	188,969	5	1,262	128	759	7,799	12,357	72,945	203,347	276,292	3,160 92	6,045 76	9,206 68
Total way freight paying tolls.....														
<i>Free articles having paid full tolls on the Welland Canal:</i>														
Corn.....		2,277						910		3,187	3,187			
Merchandise.....		12								12	12			
Coal, free, per Order in Council.....	65,491		374				25,180		91,045		91,045			
<i>Free articles for canal construction, O.C., 1884:</i>														
Cement, &c.....		2,127								2,127	2,127			
Clay, lime and sand.....	150	10							150	10	160			
Coal.....		271						5,366		5,637	5,637			
Merchandise.....		110								110	110			
Stone wrought.....	100	13,514							100	13,514	13,614			
Stone unwrought (not suitable for cutting).....	90								90		90			
Lumber sawn, in vessels.....		227								227	227			
Timber square, in vessels.....		937								937	937			
Railway ties, in vessels.....		457								457	457			
Split posts, &c., in vessels.....		1								1	1			
Grand total, way freight.	130,844	208,912	379	1,262	128	759	32,979	18,633	164,330	229,566	393,896			
Total way tolls on vessels.....												3,852 17	1,443 63	5,295 80
do passengers.....												331 78	578 04	909 82
do free goods.....														
Total way tolls.....												7,344 87	8,067 43	15,412 30

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

APPENDIX A—Continued.

No. 7.—GENERAL STATEMENT showing the Quantity of each Article transported on the Ottawa Canals, and the Amount of Revenue collected during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
Ashes, pot and pearl.		6								6	6	\$ 1 05
Apples		43								43	43	3 39
Agricultural products not enumerated, vegetables.		19								19	19	1 26
do do animal.	1	1,854							1	1,854	1,855	166 44
Agricultural implements.		11								11	11	1 55
Barley.		5								5	5	0 36
Bricks.												
Bones.		13								13	13	0 98
Brimstone.												
Buckwheat.		189								189	189	18 32
Cement and water lime.		158								158	158	3 78
Clay, lime and sand.		3,765								3,765	3,765	93 53
Coal.												
Corn.												
Cattle.		628								628	628	48 22
Cotton (raw).												
Crockery and earthenware.		4								4	4	0 76
Dye wood and dye stuffs.												
Fish.												
Flax and hemp.												
Flour.	1	6							1	6	7	0 58
Furniture.	2	20							2	20	22	2 95
Gypsum.												
Glass (all kinds).		1								1	1	0 28
Hay (pressed).		272								272	272	26 03
Hogs.		107								107	107	8 42
Horses.	21	138							21	138	159	6 81
Hides and skins, horns and hoofs.	1	5							1	5	6	0 58
Ice.												
Iron, railway.												

Department of Railways and Canals.

do pig.....	1	1	0 06
do all other.....	21	24	1 55
Iron ore.....			
Kyrolite chemical ore and other ore, except iron..	266	266	13 30
Lard and lard oil.....			
Meal, all kinds.....	13	13	0 82
Meats, other than pork.....	2	2	0 04
Marble.....			
Manilla.....			
Molasses.....			
Nails.....			
Oats.....	1,623	1,623	142 18
Oil (in barrels)	13	15	1 89
Oil cake.....			
Pease.....	225	225	18 33
Potatoes.....	136	136	8 58
Pork.....	7	7	0 38
Paint.....			
Pitch and tar.....	24	24	4 10
Rags.....	69	71	12 74
Rye.....	8	8	0 79
Flax seed.....			
Rosin.....			
Salt.....			
Stone, intended for cutting.....			
do wrought.....			
do not suitable for cutting, unwrought.....			
Seeds, all kinds.....			
Sheep.....	326	326	28 28
Soda ash.....	2	2	0 20
Steel.....			
Sugar.....	1	1	0 10
Spirits, beer, &c.....			
Tobacco (raw).....			
Tallow.....	4	4	0 36
Tin.....			
Turpentine.....			
Wheat.....			
White lead.....			
Whiting.....			
Wool.....			
All other goods and merchandise not enumerated..	5	498	76 59
Bark.....			
Barrels, empty.....	63	63	8 06
Boat knees.....			
Floats.....	36,350	36,350	315 73
Fire wood, in vessels	27,477	27,477	1,003 41
do rafts.....	270	270	2 80
Hoops.....	3	3	41
Hop poles.....			



No. (A) 7.—(GENERAL STATEMENT showing the Quantity of each Article transported on the Ottawa Canals, and the Amount of Revenue collected, &c.—*Concluded.*

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
Lumber, sawn, in vessels.	42	351,084				47,937			42	399,021	399,063	\$ 27,858 46
do rafts.		60								60	60	1 08
Masts, spars, and telegraph poles, in vessels.												
do do rafts.												
Railway ties, in vessels.		1,315				2,986				4,301	4,301	361 14
do rafts.		2,175								2,175	2,175	116 66
Saw logs.		15,678								15,678	15,678	358 32
Staves and headings, barrel												
do pipe												
do West India												
Staves, salt barrel.												
Shingles												
Split posts and fence rails, in vessels		28				104				132	132	105 05
do do rafts.		4								4	4	23
Timber, square, in vessels.		1,000								1,000	1,000	16 38
do rafts.		5,500								5,500	5,500	57 75
Traverses		40								40	40	10
Woodenware and wood partly manufactured	1								1		1	13
Total freight paying tolls.	81	451,525				51,027			81	502,552	502,633	30,901 29
<i>Free articles for canal construction per Order in Council, 1884.</i>												
Timber square, in vessels		400								400	400	
<i>Free per Order in Council, 27th June, 1890.</i>												
Floats.												
Lumber, sawn, in rafts.		17,480								17,480	17,480	
Ties, railway, in rafts.		460								460	460	
Masts, &c., in rafts.		3,313								3,313	3,313	
		600								600	600	

Timber, square, in rafts .. .. .	9,680	9,680	9,680	9,680
Split posts, &c., in rafts .. .. .	4	4	4	4
Saw logs .. .. .	27,800	27,800	27,800	27,800
Freight, grand total .. .. .	81	511,262	51,027	562,370

Total tolls on vessels .. .. .	2,995 16
do passengers .. .. .	135 83
do free goods .. .. .	\$737 32
* Damages .. .. .	
Other receipts .. .. .	8 00
Total revenue exclusive of hydraulic rents .. .. .	34,040 28

\* Amount of damages not included in above \$4.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

RICHARD DEVLIN,  
*Compiler Canal Statistics.*

APPENDIX A—Continued.

No. (A) 8.—GENERAL STATEMENT showing the Quantity of each Article transported on the Chambly Canal, and the Amount of Revenue collected during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
Ashes, pot and pearl												\$ cts.
Apples		276						16		292	292	20 39
Agricultural products, not enumerated, vegetables.												
do do animal												
Agricultural implements												
Barley	322								322	140	762	55 41
Bricks									192		192	19 20
Bones			192									
Brimstone												
Buckwheat												
Cement and water lime	9	105										
Clay, lime and sand	30											
Coal	9											
Corn												
Cattle	7	176							7	176	183	6 37
Cotton (raw)												
Crockery and earthenware		5										
Dye wood and dye stuffs.		1						15		16	16	0 50
Fish												1 60
Flax and hemp												
Flour	549	3							549	3	552	18 63
Furniture												
Gypsum												
Glass (all kinds)												
Hay (pressed)		2,852						77	203	2,929	3,132	142 58
Hogs												
Horses	16	89							16	89	105	3 80
Hides and skins, horns and hoofs												
Ice												
Iron, railway												
do pig												
do all other								1,494		1,494	1,494	149 40



## Department of Railways and Canals.

[illegible]

No. (A) 8.—GENERAL STATEMENT showing the Quantity of each Article transported on the Chamby Canal, and the Amount of Revenue collected, &c.—*Concluded.*

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
Masts, spars, and telegraph poles, in vessels.....												\$ cts
do do rafts.....												
Railway ties, in vessels.....												
do do rafts.....			2,599						2,599		2,599	207 62
Saw logs.....												
Staves and headings, barrel.....												
do do pipe.....												
do do West India.....												
Staves, salt barrel.....												
Shingles.....	62		5						67		67	25 43
Split posts and fence rails, in vessels.....	35								35		35	0 47
do do rafts.....												
Timber, square, in vessels.....												
do do rafts.....												
Traverses.....												
Woodenware and wood partly manufactured.....												
Total freight paying tolls . . . . .	8,106	7,747	241,906	174					94,203	250,012	102,124	19,896 28
Total tolls on vessels.....												3,341 23
do passengers.....												71 02
* Damages.....												
Total revenue exclusive of hydraulic rents.....												23,308 53

\* Amount of damages not included in above \$35.

DEPARTMENT OF RAILWAYS AND CANALS.

OTTAWA, 15th October, 1898.

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

## Department of Railways and Canals.

## APPENDIX A—Continued.

No. (A) 9.—GENERAL STATEMENT showing the Quantity of each Article transported on the Rideau Canal, and the Amount of Revenue collected during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Total Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
Ashes, pot and pearl.												\$ cts.
Apples	4	84					4		4		4	0 70
Agricultural products not enumerated, vegetables.	1	8							4		88	2 13
do animal	16	321							1		9	0 23
Agricultural implements.	17	55							16		337	10 52
Barley									17		72	6 55
Bricks	279	706							6		6	0 14
Bones.		2							279		985	39 72
Brimstone											2	0 10
Buckwheat.		153										
Cement and water lime.	522	13									153	7 00
Clay, lime and sand	7,057								522		13	13 88
Coal.		1,666			100				7,157		7,157	167 29
Corn	4	151									13,162	539 43
Cattle	2	1							4		155	3 86
Cotton (raw).									2		3	0 09
Crockery and earthenware.	17	35										
Dye wood and dye stuffs.									17		52	4 67
Fish	39											
Flax and hemp.									39		39	0 96
Flour	250	268										
Furniture.	14	21							250		518	13 21
Gypsum.									14		35	3 14
Glass (all kinds)	26	3										
Hay (pressed)	84	4							26		29	2 59
Hogs									84		88	2 10
Horses	4	10										
Hides and skins, horns and hoofs.	5	3							4		14	0 42
Ice									5		8	0 24
Iron, railway.												
do pig.	13											
									13		13	0 60





## Department of Railways and Canals.

[illegible]

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

APPENDIX A—Continued.

No. (A) 10.—GENERAL STATEMENT showing the Quantity of each Article transported on the St. Peter's Canal and the amount of Revenue collected during the Season of Navigation, 1896.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
Ash pot and pearl.												\$ cts.
Apples.	111	4							115	4	115	1 15
Agricultural products not enumerated, vegetables.	254	2							254	2	256	2 56
do do animal.												
Agricultural implements.	13								13		13	0 13
Barley.	39								39		39	0 39
Bricks.	129								129		129	1 29
Bones												
Brimstone.												
Buckwheat.												
Cement and water lime.	74	60							74	60	134	1 34
Clay, lime and sand.	23	1,353							23	1,353	1,376	13 76
Coal.	361	35,666							361	35,666	36,027	360 27
Corn.	18	7							18	7	25	0 25
Cattle.	11								11		11	0 11
Cotton (raw).												
Crockery and earthenware.	56								56		56	0 56
Dye wood and dye stuffs.												
Fish.	105	1,792							105	1,792	1,897	18 97
Flax and hemp.												
Flour.	2,800	46							2,800	46	2,846	28 46
Furniture.	47	15							47	15	62	0 62
Gypsum.	13	700							13	700	713	7 13
Glass (all kinds).	45								45		45	0 45
Hay (pressed)	1,595								1,595		1,595	15 95
Hogs.	6								6		6	0 06
Horses.	5								5		5	0 05
Hides and skins, horns and hoofs.												
Ice.												
Iron, railway.	60								60		60	60



Department of Railways and Canals.

do pig.....	103	11				103	11		114	1 14
do all other.....										
Iron ore.....										
Kryolite chemical ore and other ore, except iron										
Lard and lard oil.....	35					35			35	0 35
Meal, all kinds.....	1,027	12				1,027	12		1,039	10 39
Meats, other than pork.....	70	3				70	3		73	0 73
Marble.....	10	522				10	522		532	5 32
Manilla.....	42					42			42	0 42
Molasses.....	262	2				262	2		264	2 64
Nails.....	64					64			64	0 64
Oats.....	1,249	7				1,249	7		1,256	12 56
Oil (in barrels).....	202	24				202	24		226	2 26
Oil cake.....										
Pease.....	64					64			64	64
Potatoes.....	1,315	1				1,315	1		1,316	13 16
Pork.....	102	1				102	1		103	1 03
Paint.....	45					45			45	0 45
Pitch and tar.....	6					6			6	0 06
Rags.....										
Rye.....										
Flax seed.....										
Rosin.....										
Salt.....	525	27				525	27		552	5 52
Stone intended for cutting		600					600		600	6 00
do wrought.....										
do not suitable for cutting unwrought.....	105	7,260				105	7,260		7,365	73 65
Seeds, all kinds.....										
Sheep.....										
Soda ash.....										
Steel.....	7					7			7	0 07
Sugar.....	224	1				224	1		225	2 25
Spirits, beer, &c.....	268	10				268	10		278	2 78
Tobacco (raw).....	9					9			9	0 09
Tallow.....	2	1				2	1		3	0 03
Tin.....	52	2				52	2		54	0 54
Turpentine.....										
Wheat.....		68					68		68	0 68
White lead.....										
Whiting.....										
Wool.....										
All other goods and merchandise not enumerated..	897	54				897	54		951	9 51
Bark.....		4					4		4	0 04
Barrels empty.....	55	77				55	77		132	1 32
Boat knees.....										
Floats.....										
Firewood, in vessels.....		353					353		353	3 53
do in rafts.....										
Hoops.....		24					24		24	0 24
Hop poles.....										

No. (A) 10—GENERAL STATEMENT showing the quantity of each Article transported on the St. Peter's Canal, &c.—Concluded.

Articles.	From Canadian Ports.		From Canadian to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
Lumber, sawn, in vessels	5,374	60					5,374	60	5,434	\$ 54 34
do in rafts										
Masts, spars and telegraph poles, in vessels	31						31		31	0 31
do do in rafts										
Railway ties, in vessels										
do in rafts										
Saw logs										
Staves and headings, barrel										
do do pipe										
do do West India										
Stave, salt barrel										
Shingles	330	3					330	3	333	3 33
Split posts and fence rails, in vessels										
do in rafts	65	4					65	4	69	0 69
Timber square, in vessels										
do in rafts										
Traverses	12						12		12	0 12
Woodenware and wood partly manufactured										
Total freight paying tolls	18,317	48,776					1,8317	48,776	67,093	670 93
Total tolls on vessels										2,173 77
Total tolls										2,844 70
Other receipts										12 00
Total revenue										2,856 70

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

APPENDIX A—Continued.

No. (A) 11.—GENERAL STATEMENT showing the Quantity of each Article transported on the Trent Valley Canals and the Amount of Revenue collected during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	
Ashes, pot and pearl.											\$ cts.
Apples	2								2		0 02
Agricultural products not enumerated, vegetables.											
do animal.											
Agricultural implements.											
Barley.	18	441							18	441	4 61
Bricks											
Bones											
Brimstone.											
Buckwheat.											
Cement and water lime.	1	5							1	5	0 15
Clay, lime and sand.		11								11	0 12
Coal											
Corn											
Cattle.	32	2							32	2	0 42
Cotton (raw).											
Crockery and earthenware											
Dye wood and dye stuffs.											
Fish.											
Flax and hemp.											
Flour.	20								20		0 47
Furniture											
Gypsum.											
Glass (all kinds).											
Hay (pressed)	2								2		0 26
Hogs.	87								87		0 87
Horses	1								1		0 01
Hides and skins, horns and hoofs.											
Ice.											
Iron, railway	40								40		0 40





## Department of Railways and Canals.

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RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.





# Department of Railways and Canals.

do pig.....	486	63	6	488	63	6	0 12
do all other.....			2			551	10 39
do ore.....							
Kryolite chemical ore and other ore, except iron...							
Lard and lard oil.....	2	9		2	9	11	0 22
Meal, all kinds.....		16			16	16	0 30
Meats, other than pork.....							
Marble.....							
Manilla.....							
Molasses.....	18		4	22		22	0 56
Nails.....	43			43		43	0 81
Oats.....	74	168		74	168	242	6 09
Oil (in barrels).....							
Oil cake.....	215	394		215	394	609	11 45
Pease.....	1	11		1	11	12	0 23
Potatoes.....	12	7		12	7	19	0 37
Pork.....	50	15		50	15	65	1 66
Paint.....							
Pitch and tar.....							
Rags.....	3			3		3	0 08
Rye.....	98	242		98	242	340	6 40
Flax seed.....							
Rosin.....							
Salt.....	20	25	8	28	115	143	2 75
Stone, intended for cutting.....							
do wrought.....							
do not suitable for cutting, unwrought.....	53		25	53		53	0 53
Seeds, all kinds.....						25	0 47
Sheep.....			26			96	2 41
Soda ash.....	70						
Steel.....							
Sugar.....	620	2	30	650	2	652	16 38
Spirits, beer, &c.....	24	18	29	53	18	71	1 79
Tobacco (raw).....							
Tallow.....							
Tin.....	50	12	87	137	12	149	3 73
Turpentine.....		2			2	2	0 05
Wheat.....	45	198		45	198	243	4 58
White lead.....	1			1		1	0 03
Whiting.....	89			89		89	2 24
Wool.....							
All other goods and merchandise not enumerated.....	2,417	2,637	38	2,455	2,639	5,094	127 65
Bark.....							
Barrels, empty.....	4			4		4	0 10
Boat knees.....							
Floats.....							
Firewood, in vessels.....		300			300	300	2 50
do rafts.....							
Hoops.....							
Hop poles.....							

No. (A) 12.—GENERAL STATEMENT showing the Quantity of each Article transported on the Murray Canal, and the Amount of Revenue collected during the Season of Navigation in 1897—*Concluded.*

Articles.	From Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	
Lumber, sawn, in vessels.											\$ cts.
do rafts	246	4	193						439	4	5 08
Masts, spars and telegraph poles, in vessels.	10								10		0 07
do rafts											
Railway ties, in vessels.											
do rafts											
Saw-logs											
Staves and headings, barrel.											
do pipe.											
do West India.											
Staves, salt barrel.											
Shingles.	26	5							31		0 54
Split posts and fence rails, in vessels.											
do rafts											
Timber, square, in vessels.											
do rafts		1,620							1,620	1,620	20 25
Traverses.											
Woodenware and wood partly manufactured											
Total freight paying tolls.	5,897	6,525	586						6,483	6,748	275 75
Total tolls on vessels											226 66
do passengers											152 60
Total revenue exclusive of hydraulic rents.											655 01

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

# Department of Railways and Canals.

## APPENDIX A—Continued.

No. (A) 13.—GENERAL STATEMENT showing the Quantity of each Article transported on the (Canadian) Sault Ste. Marie Canal, during the Season of Navigation in 1897.

Articles.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total. Tons.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	
Ashes, pot and pearl.....											
Apples.....	20								20		20
Agricultural products not enumerated, vegetables....	4								4	1	5
do do animal.....											
Agricultural implements.....	1								1		1
Barley.....						15,991				15,991	15,991
Bricks.....					30				30		30
Bones.....											
Brimstone.....											
Buckwheat.....											
Cement and water lime.....	345				250				595		595
Clay, lime and sand.....		548		300						848	851
Coal (soft).....	1,719				345,352		40,476		387,547		387,547
do (hard).....					92,704		6,028		98,732		98,732
Corn.....						7,213			7,213		7,213
Cattle.....	2								2		2
Cotton (raw).....											
Crockery and earthenware.....											
Dye wood and dye stuffs.....											
Fish.....		333		185		21		13			552
Flax and hemp.....											
Flour.....	1	22,445				87,032		12,048	1	121,525	121,526
Furniture.....			10						10		10
Gypsum.....											
Glass (all kinds).....	46		18						64		64
Hay (pressed).....	230								230		230
Hogs.....											
Horses.....	20	77		2				1	20	80	100
Hides and skins, horns and hoofs.....		2			110				110	2	112
Ice.....											
Iron, railway.....	109						13,320		13,429		13,429
do pig.....						2,647				2,647	2,647



No. (A) 13.—GENERAL STATEMENT showing the Quantity of each Article transported on the (Canadian) Sault Ste. Marie Canal, &c.—*Concluded.*

Articles.	From Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	
Iron, all other	148				1,851	30	437		2,436	30	3,466
do ore						3,572,854				3,572,854	3,572,854
Copper ore						12,717				12,717	12,717
Kryolite, chemical ore and other ore, except iron.						4,030				4,030	4,030
Lard and lard oil											
Meal, all kinds											
Meats, other than pork	4					21,609				21,609	21,609
Marble			6						4		4
Manilla	282								6		6
Molasses	3								282		282
Nails	277		20		785				3		3
Oats.	85	616				13,335			1,082		1,082
Oil (in barrels)	1		174	1,241	30				85	15,192	15,277
Oil cake		20				120		97	642		642
Pease									237		237
Potatoes											
Pork											
Paint	37								37		37
Pitch and tar	20								20		20
Rags.											
Rye						5,698				5,698	5,698
Flax seed		17				28,209		2,469		30,695	30,695
Rosin.	39		86						39		39
Salt	290				2,602				2,978		2,978
Stone, intended for cutting					2,073				2,073		2,073
do wrought		270			2,149				2,149	270	2,419
do not suitable for cutting, unwrought.											
Seeds, all kinds	3								3		3
Sheep											
Soda ash	13								13		13
Steel	13								13		13
Sugar	407		49		1,144				1,600		1,600
Spirits, beer, &c.	244		40						284		284
Tobacco (raw)											

## Department of Railways and Canals.

[illegible]

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

APPENDIX

No. (A) 14.—STATEMENT of Traffic on the undermentioned Canals, and

Articles.	Welland Canal.		St. Lawrence Canals.		Chambly Canal.	
	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
<i>Class No. 1.</i>		\$ cts.		\$ cts.		\$ cts.
Canadian vessels, steam.....	410,626	4,722 21	689,155	4,544 43	79,514	252 66
United States vessels, steam .....	770,093	11,551 91	22,102	124 88	645	5 22
Canadian vessels, sail.....	178,501	3,716 21	1,424,394	16,605 54	35,771	492 71
United States vessels, sail.....	173,041	3,902 57	106,666	1,152 47	206,657	2,590 64
Total, class No. 1.....	1,532,261	23,892 90	2,242,317	22,427 32	322,587	3,341 23
<i>Class No. 2.</i>						
Passengers .....	No. 36,402	400 80	No. 54,113	2,521 52	No. 4,286	71 02
<i>Class No. 3.</i>						
	Tons.		Tons.		Tons.	
Bricks.....	1,651	322 20	6,839	340 04	762	55 41
Brimstone.....			768	64 81		
Cement and water lime.....	415	40 11	7,215	639 35	3,789	269 24
Clay, lime and sand.....	718	99 85	24,706	1,054 02	3,728	464 78
Fish.....	55	8 25	137	10 23		
Gypsum.....			1,100	13 86		
Iron, railway.....	7,206	1,441 20	381	36 76		
do pig.....	2,852	566 05	1,807	217 41		
do all other.....	14,160	2,755 04	10,264	826 18	1,494	149 40
Salt.....	227	44 00	2,991	343 64	465	36 33
Steel.....	5,060	1,011 75	1,706	156 84	52	5 20
Stone, for cutting .....	330	66 00	496	35 92	146	14 60
Apples.....	242	7 93	3,789	557 68	292	20 39
Barley.....	14,173	1,417 30	4,880	386 33		
Buckwheat.....			6,537	243 71		
Corn.....	390,615	39,061 50	4,958	401 00		
Cotton, raw.....			6	0 45		
Flax and hemp.....	1,041	156 15	67	6 70		
Flour.....	9,065	1,709 90	2,922	286 78	552	18 63
Hay, pressed.....	301	60 20	600	33 93	3,132	142 58
Meals, all kinds .....	42,343	8,468 60	565	42 58		
Oil cake.....			40	3 01		
Oats.....	25,161	2,520 77	51,322	2,020 52	2,666	99 82
Pease.....	2,082	208 25	36,913	1,748 60	6	0 21
Potatoes .....	7	0 53	20	1 46	15	1 50
Rye.....	8,483	848 30	14,397	750 96		
Flax seed.....	3,464	346 50				
Seeds, all kinds.....	322	63 25	1,229	95 58		
Tobacco, raw.....	51	10 20				
Wheat.....	324,743	32,449 39	44,439	1,960 56		
All other agricultural products, vegetable	56	9 48	1,378	194 37		
Bones.....			264	21 60	192	19 20
Cattle.....	4	0 10	330	22 99	183	6 37
Hogs.....			4	0 31		
Hides and skins, horns and hoofs.....	36	6 55	14	2 10		
Horses.....	45	2 86	532	30 94	105	3 80
Lard and lard oil.....	1,444	288 80	200	25 48		
Meats, other than pork.....	3	0 45	5	0 45		
Pork.....	245	48 90	372	37 83		
Sheep.....			199	14 98	117	4 13
Tallow.....	285	42 75	47	6 05		
Wool.....	197	39 40	31	4 65		
All other agricultural products, animal			3,754	464 92		
Total, class No. 3.....	857,082	94,122 51	238,224	13,105 58	17,696	1,311 59



# Department of Railways and Canals.

A.—Continued.

the Amount of Tolls collected during the Season of Navigation in 1897.

Murray Canal.		Ottawa Canals.		Rideau Canal.		St. Peter's Canal.		Trent Valley Canals.	
Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
	\$ cts.		\$ cts.		\$ cts.		\$ cts.		\$ cts.
181,319	192 65	140,205	606 62	105,680	739 58	30,928	618 56	57,830	360 96
188	2 00			646	12 41	587	11 74		
5,638	27 13	145,541	2,057 01	33,259	492 73	73,722	1,478 05	48,654	177 45
367	4 88	14,302	331 53	11,838	265 73	3,271	65 42		
187,512	226 66	300,048	2,995 16	151,423	1,510 45	108,508	2,173 77	106,484	538 41
No.		No.		No.		No.		No.	
12,864	152 60	10,872	135 83	4,908	94 29			22,492	148 98
Tons.		Tons.		Tons.		Tons.		Tons.	
78	1 48			985	39 72	129	1 29	459	4 61
568	10 70	158	3 78	535	13 88	134	1 34	6	0 15
23	0 45	3,765	93 53	7,157	167 29	1,376	13 76	11	0 12
26	0 52			39	0 96	1,897	18 97		
						713	7 13		
						60	0 60	40	0 40
6	0 12	1	0 06	13	0 60				
551	10 39	24	1 55	644	17 32	114	1 14	5	0 05
143	2 75			1,732	47 84	552	5 52		
				29	0 82	7	0 07		
				141	4 70	600	6 00		
631	12 15	43	3 39	88	2 13	115	1 15	2	0 02
65	1 22	5	0 36	6	0 14	39	0 39		
70	1 32	189	18 32	153	7 00				
				155	3 86	25	0 25		
3	0 06								
		7	0 58	518	13 21	2,846	28 46	20	0 47
		272	26 03	88	2 10	1,595	15 95	2	0 26
16	0 30	13	0 82	38	0 93	1,039	10 39		
43	0 81	1,623	142 18	448	17 68	1,256	12 56	8	0 34
609	11 45	225	18 33	18	0 84	64	0 64	13	6 13
12	0 23	136	8 58	6	0 21	1,316	13 16	16	0 16
340	6 40	8	0 79	5	0 19				
25	0 47								
				3	0 07	9	0 09		
243	4 58			625	14 60	68	0 68	49	0 49
33	0 65	19	1 26	9	0 23	256	2 56		
		13	0 98	2	0 10				
6	0 12	628	48 22	3	0 09	11	0 11	34	0 42
		107	8 42			6	0 06	87	0 87
27	0 52	6	0 58	8	0 24				
17	0 34	159	6 81	14	0 42	5	0 05	1	0 01
11	0 22			27	0 65	35	0 35		
		2	0 04	1	0 03	73	0 73		
19	0 37	7	0 38	199	4 90	103	1 03		
		326	28 28	3	0 07			1	0 01
		4	0 36			3	0 03		
				5	0 13				
191	3 63	1,855	166 44	337	10 52				
3,756	71 25	9,595	580 07	14,034	373 47	14,446	144 46	754	8 51

## No. (A) 14.—STATEMENT of Traffic on the undermentioned

Articles.	Welland Canal.		St. Lawrence Canals.		Chambly Canal.	
	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
<i>Class No. 4.</i>		\$ cts.		\$ cts.		\$ cts.
Ashes, pot and pearl.....	133	26 60	31	6 20		
Agricultural implements.....	1	0 15	61	8 26		
Crockery and earthenware.....	144	21 60	91	16 65	5	0 50
Dye wood and dye stuffs.....			54	6 15	16	1 60
Furniture.....	16	2 80	1,321	202 83		
Glass, all kinds.....	109	19 45	1,726	338 18		
Marble.....			2	0 20		
Manilla.....	1	0 15	14	2 80		
Molasses.....	92	14 25	2,204	145 23		
Nails.....	46	5 20	1,439	195 46		
Oil, in barrels.....	462	87 35	938	154 74	51	4 94
Paint.....	9	0 83	424	58 04		
Pitch and tar.....	1	0 15	280	25 46	455	45 50
Rags.....			261	38 38		
Rosin.....			2,096	127 54	2,163	216 30
Soda ash.....			930	178 81	288	19 20
Sugar.....	5,793	864 47	4,862	934 05	2,240	224 00
Stone, wrought.....			496	28 55		
Tin.....	18	2 70	1,272	251 65		
Turpentine.....			82	4 15	63	6 30
White lead.....			114	22 44		
Whiting.....			427	85 15		
Whisky and all other spirits.....	148	24 50	487	81 99		
Merchandise, not enumerated.....	47,222	6,937 73	11,218	1,694 68	13,996	1,030 74
Total, class No. 4.....	54,195	8,007 93	30,830	4,607 59	19,277	1,549 08
<i>Class No. 5.</i>						
Bark.....						
Barrels, empty.....	21	3 98	123	12 24	1	0 12
Boat knees.....						
Floats.....			2,395	41 97		
Firewood, in vessels.....	15,027	607 41	11,798	214 26	181,114	6,012 58
do rafts.....			102	2 13		
Lumber sawn, in vessels.....	72,270	12,940 30	31,072	1,306 01	53,838	3,149 53
do do rafts.....			663	29 79		
Hoops.....	265	66 25				
Railway ties, in vessels.....	999	159 61	35	0 69	2,599	207 62
do do rafts.....						
Masts, spars and telegraph poles, in vessels.....	403	60 45				
Masts, spars and telegraph poles, in rafts.....	14	2 58	14,921	372 20		
Square timber, in vessels.....	83,365	12,497 99	1,670	44 13		
do do rafts.....	47	1 32	6,023	203 95		
Woodenware and wood partly manufactured.....	26	10 40	66	21 40		
Shingles.....			10	2 17	67	25 43
Split posts and fence rails, in vessels.....	4	1 60	2	0 20	35	0 47
do do rafts.....						
Saw logs.....	4,532	163 15	15,189	347 12		
Staves and headings, barrel.....						
do do pipe.....						
do do West India.....						
do do salt barrel.....	4,891	226 26				
Traverses.....			2,319	14 40		
Hop poles.....			17	1 00		
Total, class No. 5.....	181,864	26,741 30	86,405	2,613 66	237,654	9,395 75

# Department of Railways and Canals.

Canals, and the Amount of Tolls collected, &c.—*Continued.*

Murray Canal.		Ottawa Canals.		Rideau Canal.		St. Peter's Canal.		Trent Valley Canals.	
Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
	\$ cts.		\$ cts.		\$ cts.		\$ cts.		\$ cts.
6	0 15	6	1 05	4	0 70				
4	0 10	11	1 55	72	6 55	13	0 13		
		4	0 76	52	4 67	56	0 56		
244	6 37	22	2 95	35	3 14	62	0 62		
149	3 79	1	0 28	29	2 59	45	0 45		
						532	5 32		
				37	3 22	42	0 42		
				95	8 32	264	2 64		
22	0 56			102	10 85	64	0 64		
242	6 09	15	1 89	208	19 08	226	2 26		
65	1 66			17	1 61	45	0 45		
		24	4 10	18	1 60	6	0 06		
3	0 08	71	12 74	15	1 94				
				1	0 09				
96	2 41	2	0 20	1	0 09				
652	16 38	1	0 10	470	43 38	225	2 25		
				1	0 09				
149	3 73			12	1 26	54	0 54		
2	0 05								
1	0 03			19	2 07				
89	2 24			1	0 09				
71	1 79			70	6 21	278	2 78		
5,094	127 65	498	76 59	1,159	108 66	951	9 51	93	2 79
6,889	173 08	655	102 21	2,418	226 21	2,863	28 63	93	2 79
				25	0 59	4	0 04	35	1 30
4	0 10	63	8 06	15	0 90	132	1 32		
		36,350	315 73	820	14 35			4,086	33 55
300	2 50	27,477	1,003 41	10,910	194 50	353	3 53	24,133	258 63
		270	2 80						
443	5 08	399,063	27,858 46	32,029	2,892 05	5,434	54 34	1,373	29 64
		60	1 08					434	7 50
		3	0 41			24	0 24		
		4,301	361 14	1,599	171 14			25	0 50
		2,175	116 66	530	56 20			108	4 25
10	0 07			55	2 81	31	0 31	350	3 50
		1,000	16 38			69	0 69	100	1 00
1,620	2,025	5,500	57 75						
		1	0 13	23	3 21	12	0 12		
31	0 54	132	105 05	117	24 32	333	3 33	200	17 38
				3	0 23				
		4	0 23						
		15,678	358 32	464	10 54			4,450	39 71
		40	0 10	440	2 79				
				18	2 50				
2,408	28 54	492,117	30,205 71	47,048	3,376 13	6,392	63 92	35,294	396 96



No. (A) 14.—STATEMENT of Traffic on the undermentioned

Articles.	Welland Canal.		St. Lawrence Canals.		Chambly Canal.	
	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
		\$ cts.		\$ cts.		\$ cts.
<i>Special Class.</i>						
Coal .....	176,226	35,244 68	176,197	25,422 32	77,374	7,626 36
Kryolite or chemical ore .....						
Iron ore .....						
Stone, unwrought, not suitable for cutting .....	383	22 05	1,018	20 10	135	13 50
Ice .....						
Total special class .....	176,609	35,266 73	177,215	25,442 42	77,509	7,639 86
Total freight and tolls .....	1,269,750	188,432 17	532,674	70,718 99	352,136	23,308 53
Timber and other wood, free .....			8,280	489 50		
Wheat, corn, flour, iron, salt, coal, etc., free .....	4,542	681 30	690,411	64,410 08		
Grand totals, passengers and tonnage of vessels not included .....	1,274,292	189,113 47	1,231,365	135,617 67	352,136	23,308 53

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

Department of Railways and Canals.

Canals and the Amount of Tolls collected, &c.—*Concluded.*

Murray Canal.		Ottawa Canals.		Rideau Canal.		St. Peter's Canal.		Trent Valley Canals.	
Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
	\$ cts.		\$ cts.		\$ cts.		\$ cts.		\$ cts.
125	2 35	266	13 30	13,162 37	539 43 0 99	36,027	360 27		
53	0 53			444	10 38	7,365	73 65		
178	2 88	266	13 30	13,643	550 80	43,392	433 92		
13,231	655 01	502,633 59,737	34,032 28 737 32	77,143	6,131 35	67,093	2,844 70	36,141	1,095 65
				133	3 55				
13,231	655 01	562,370	34,769 60	77,276	6,134 90	67,093	2,844 70	36,141	1,095 65

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

## APPENDIX

No. (A) 15.—SUMMARY STATEMENT of Traffic on the undermentioned Canals during of each description of property passed through,

Articles.	Welland Canal.		St. Lawrence Canals.		Chambly Canal.	
	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
		\$ cts.		\$ cts.		\$ cts.
Vessels of all kinds. ....	1,532,261	23,892 90	2,242,317	22,427 32	322,587	3,341 23
Passengers. ....	No. 36,402	400 80	No. 54,113	2,521 52	No. 4,286	71 02
<i>Forest, Produce of the Wood.</i>	Tons.		Tons.		Tons.	
Bark .....						
Boat knees .....						
Floats.....			2,395	41 97		
do .....	Free					
Firewood .....	15,027	607 41	11,900	216 39	181,114	6,012 58
Hoops and hop poles.....	265	66 25	17	1 00		
do .....	Free		257			
Lumber, sawed.....	72,270	12,940 30	31,735	1,335 80	53,838	3,149 53
do .....	Free		1,061			
Masts, spars, &c.....	417	63 03	14,921	372 20		
do .....	Free					
Railway ties .....	999	159 61	35	0 69	2,599	207 62
do .....	Free		457			
Saw logs.....	4,532	163 15	15,189	347 12		
do .....	Free	4,891	226 26			
Staves, all kinds.....						
do .....	Free		4,716			
Shingles. ....			10	2 17	67	25 43
Split posts and rails .....	4	1 60	2	0 20	35	0 47
do .....	Free		1			
Timber, square.....	83,412	12,499 31	7,693	248 08		
do .....	Free		1,788			
Traverses .....			2,319	14 40		
Total .....	181,817	26,726 92	94,496	2,580 02	237,653	9,395 63
<i>Farm Stock.</i>						
Cattle .....	4	0 10	330	22 99	183	6 37
Hogs .....			4	0 31		
Horses.....	45	2 86	532	30 94	105	3 80
do .....	Free		1			
Sheep.....			199	14 98	117	4 13
Total .....	49	2 96	1,066	69 22	405	14 30
<i>Produce of Animals.</i>						
Bones.....			264	21 60	192	19 20
Horns and hoofs, hides and skins, raw.	36	6 55	14	2 10		
Lard and lard oil. ....	1,444	288 80	200	25 48		
Meats other than pork.....	3	0 45	5	0 45		
Pork.....	245	48 90	372	37 83		
Tallow.....	285	42 75	47	6 05		
Wool .....	197	39 40	31	4 65		
Agricultural products not enumerated, animal.....			3,754	464 92		
Total .....	2,210	426 85	4,687	563 08	192	19 20



# Department of Railways and Canals.

A—Continued.

the Season of Navigation ended 31st December, 1897, showing the Total Quantity and the Amount of Tolls collected thereon.

Murray Canal.		Ottawa Canals.		Rideau Canal.		St. Peter's Canal.		Trent Valley Canals.	
Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
	\$ cts.		\$ cts.		\$ cts.		\$ cts.		\$ cts.
187,512	226 66	300,048	2,995 16	151,423	1,510 45	108,508	2,173 77	106,484	538 41
No. 12,864	152 60	No. 10,872	135 83	No. 4,908	94 29	No. .....	.....	No. 22,492	148 98
Tons.		Tons.		Tons.		Tons.		Tons.	
.....		.....		25	0 59	4	0 04	35	1 30
.....		36,350	315 73	820	14 35	.....		4,086	33 55
300	2 50	17,480		.....		.....		.....	
.....		27,747	1,006 21	10,910	194 50	353	3 53	24,133	258 63
.....		3	0 41	18	2 50	24	0 24	.....	
443	5 08	399,123	27,859 54	32,029	2,892 05	5,434	54 34	1,807	37 14
.....		460		.....		.....		.....	
10	0 07	600		0 55	2 81	31	0 31	450	4 50
.....		6,476	477 80	2,129	227 34	.....		133	4 75
.....		3,313		.....		.....		.....	
.....		15,678	358 32	464	10 54	.....		4,450	39 71
.....		27,800		.....		.....		.....	
31	0 54	132	105 05	117	24 32	333	3 33	200	17 38
.....		4	0 23	3	0 23	.....		.....	
1,620	20 25	6,500	74 13	.....		69	0 69	.....	
.....		10,080		.....		.....		.....	
.....		40	0 10	440	2 79	.....		.....	
2,404	28 44	551,790	30,197 52	47,010	3,372 02	6,248	62 48	35,294	396 96
6	0 12	628	48 22	3	0 09	11	0 11	34	0 42
.....		107	8 42	.....		6	0 06	87	0 87
17	0 34	159	6 81	14	0 42	5	0 05	1	0 01
.....		326	28 28	3	0 07	.....		1	0 01
23	0 46	1,220	91 73	20	0 58	22	0 22	123	1 31
27	0 52	13	0 98	2	0 10	.....		.....	
11	0 22	6	0 58	8	0 24	.....		.....	
.....		.....		27	0 65	35	0 35	.....	
19	0 37	2	0 04	1	0 03	73	0 73	.....	
.....		7	0 38	199	4 90	103	1 03	.....	
.....		4	0 36	.....		3	0 03	.....	
.....		.....		5	0 13	.....		.....	
191	3 63	1,855	166 44	337	10 52	.....		.....	
248	4 74	1,887	168 78	579	16 57	214	2 14	.....	

APPENDX

No. (A) 15.—SUMMARY STATEMENT of Traffic on the Undermentioned

Articles.	Welland Canal.		St. Lawrence Canal.		Chambly Canal.	
	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
<i>Agricultural Products.</i>						
		\$ cts.		\$ cts.		
Agricultural products not enumerated, vegetable	56	9 48	1,378	194 37		
do do Free	4					
Apples	242	7 93	3,789	557 68	292	20 39
Barley	14,173	1,417 30	4,880	386 33		
Buckwheat			6,537	243 71		
Cotton, raw			6	0 45		
Corn	390,615	39,061 50	4,958	401 00		
do Free			267,583			
Flax and hemp	1,041	156 15	67	6 70		
Flaxseed	3,464	346 50				
do Free			3,293			
Flour	9,065	1,709 90	2,922	286 78	552	18 63
do Free			1,029			
Hay, pressed	301	60 20	600	33 93	3,132	142 58
Meals, all kinds	42,343	8,468 60	565	42 58		
Manilla	1	0 15	14	2 80		
Oats	25,161	2,520 77	51,322	2,020 52	2,666	99 82
do Free			6,847			
Pease	2,082	208 25	36,913	1,748 60	6	0 21
do Free			2,078			
Potatoes	7	0 53	20	1 46	15	1 50
Rye	8,483	848 30	14,397	750 96		
do Free			8,435			
Seeds, all other	322	63 25	1,229	95 58		
do Free	121					
Tobacco, raw	51	10 20				
do Free			51			
Wheat	324,743	32,449 39	44,439	1,960 56		
do Free			278,498			
Total	822,275	87,338 40	741,850	8,734 01	6,663	283 13
<i>Manufactures.</i>						
Ashes, pot and pearl	133	26 60	31	6 20		
do Free	1		133			
Agricultural implements	1	0 15	61	8 26		
Barrels, empty	21	3 98	123	12 24	1	0 12
Bricks	1,651	322 20	6,839	340 04	762	55 41
do Free	70					
Cement and water lime	415	40 11	7,215	639 35	3,789	269 24
do Free	837		2,127			
Crockery and earthenware	144	21 60	91	16 65	5	0 50
do Free	4					
Furniture	16	2 80	1,321	202 83		
do Free	2		1			
Glass, all kinds	109	19 45	1,726	338 18		
do Free	799		53			
Iron, railway	7,206	1,441 20	381	36 76		
Iron, pig	2,852	566 05	1,807	217 41		
do Free	6					
do all other	14,160	2,755 04	10,264	826 18	1,494	149 40
do do Free	559		7,564			
Molasses	92	14 25	2,204	145 23		
do Free			9			
Nails	46	5 20	1,439	195 46		
do Free	129					
Oil	462	87 35	938	154 74	51	4 94
do Free	12		112			
Oil cake			40	3 01		

# Department of Railways and Canals.

A—Continued.

Canals, and the Amount of Tolls collected, &c.—Continued.

Murray Canal.		Ottawa Canals.		Rideau Canal.		St. Peter's Canal.		Trent Valley Canals.	
Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
	\$ cts.		\$ cts.		\$ cts.		\$ cts.		\$ cts.
33	0 65			9	0 23	256	2 56		
631	12 15	43	3 39	88	2 13	115	1 15	2	0 02
65	1 22	5	0 36	6	0 14	39	0 39		
70	1 32	189	18 32	153	7 00				
3	0 06								
				155	3 86	25	0 25		
		7	0 58	518	13 21	2,846	28 46	20	0 47
		272	26 03	88	2 10	1,595	15 95	2	0 26
16	0 30	13	0 82	38	0 93	1,039	10 39		
				37	3 22	42	0 42		
43	0 81	1,623	142 18	448	17 68	1,256	12 56	8	0 34
609	11 45	225	18 33	18	0 84	64	0 64	13	0 13
12	0 23	136	8 58	6	0 21	1,316	13 16	16	0 16
340	6 40	8	0 79	5	0 19				
25	0 47	19	1 26						
				3	0 07	9	0 09		
243	4 58			625	14 60	68	0 68	49	0 49
2,090	39 64	2,540	220 64	2,197	66 41	8,670	86 70	110	1 87
		6	1 05	4	0 70				
6	0 15	11	1 55	72	6 55	13	0 13		
4	0 10	63	8 06	15	0 90	132	1 32		
78	1 48			985	39 72	129	1 29	459	4 61
568	10 70	158	3 78	535	13 88	134	1 34	6	0 15
4	0 10	4	0 76	52	4 67	56	0 56		
244	6 37	22	2 95	35	3 14	62	0 62		
149	3 79	1	0 28	29	2 59	45	0 45		
						60	0 60	40	0 40
6	0 12	1	0 06	13	0 60				
551	10 39	24	1 55	644	17 32	114	1 14	5	0 05
				95	8 32	264	2 64		
22	0 56			102	10 85	64	0 64		
242	6 09	15	1 89	208	19 08	226	2 26		



No. (A) 15.—SUMMARY STATEMENT of Traffic on the Undermentioned Canals

Articles.	Welland Canal.		St. Lawrence Canals.		Chambly Canal.	
	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
<i>Manufactures—Concluded.</i>		\$ cts.		\$ cts.		\$ cts.
Paint .....	9	0 83	424	58 04		
do .....	20					
Pitch and tar .....	1	0 15	280	25 46	455	45 50
do .....	20					
Rosin .....			2,096	127 54	2,163	216 30
Soda ash .....			930	178 81	288	19 20
do .....	249					
Spirits, whisky, &c. ....	148	24 50	487	81 99		
do .....	93		46			
Steel .....	5,060	1,011 75	1,706	156 84	52	5 20
do .....			375			
Sugar .....	5,793	864 47	4,862	934 05	2,240	224 00
do .....	311					
Tin .....	18	2 70	1,272	251 65		
do .....	359					
Turpentine .....			82	4 15	63	6 30
White lead .....			114	22 44		
do .....	5					
Whiting .....			427	85 15		
do .....	104					
Woodenware .....	26	10 40	66	21 40		
Total .....	41,943	7,220 78	57,646	5,090 06	11,363	996 11
<i>Merchandise.</i>						
Brimstone (crude) .....			768	64 81		
Clay, lime and sand .....	718	99 85	24,706	1,054 02	3,728	464 78
do .....	4		198			
Coal .....	176,226	35,244 68	176,197	25,422 32	77,374	7,626 36
do .....			96,722			
Dye wood and dye stuffs .....			54	6 15	16	1 60
Fish .....	55	8 25	137	10 23		
do .....	10					
Gypsum .....			1,100	13 86		
Ores (all kinds) .....						
Marble .....			2	0 20		
Rags .....			261	38 38		
Salt .....	227	44 00	2,991	343 64	465	36 33
do .....	25		216			
Stone (all kinds) .....	713	88 05	2,010	84 57	281	28 10
do .....	87		13,704			
All other goods and merchandise (not enumerated) .....	47,222	6,937 73	11,218	1,694 68	13,996	1,030 74
do .....	711		1,336			
Total .....	225,998	42,422 56	331,620	28,732 86	95,860	9,187 91
Grand totals (passengers and tonnage of vessels not included) .....	1,274,292	188,432 17	1,231,365	70,718 09	352,136	23,308 53

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

# Department of Railways and Canals.

and the amount of Tolls collected, &c.—*Concluded.*

Murray Canal.		Ottawa Canals.		Rideau Canal.		St. Peter's Canal.		Trent Valley Canal.	
Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.	Tons.	Tolls.
	\$ cts.		\$ cts.		\$ cts.		\$ cts.		\$ cts.
65	1 66			17	1 61	45	0 45		
		24	4 10	18	1 60	6	0 06		
				1	0 09				
96	2 41	2	0 20	1	0 09				
71	1 79			70	6 21	278	2 78		
				29	0 82	7	0 07		
652	16 28	1	0 10	470	43 38	225	2 25		
149	3 73			12	1 26	54	0 54		
2	0 05								
1	0 03			19	2 07				
89	2 24			1	0 09				
		1	0 13	23	3 21	12	0 12		
2,999	68 14	333	26 46	3,450	188 75	1,926	19 26	510	5 21
23	0 45	3,765	93 53	7,157	167 29	1,376	13 76	11	0 12
125	2 35			13,162	539 43	36,027	360 27		
				133					
26	0 52			39	0 96	1,897	18 97		
						713	7 13		
		266	13 30	37	0 99				
3	0 08	71	12 74	15	1 94	532	5 32		
143	2 75			1,732	47 84	552	5 52		
53	0 53			586	15 17	7,965	79 65		
5,094	127 65	498	76 59	1,159	108 66	951	9 51	93	2 79
5,467	134 33	4,600	196 16	24,020	882 28	50,013	500 13	104	2 91
13,231	655 01	562,370	34,032 28	77,276	6,131 35	67,093	2,844 70	36,141	1,095 65

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

APPENDIX A—Continued.

No. (A) 16.—STATEMENT showing the amount of Tolls accrued each month during the Season of Navigation ended 31st December, 1897.

Canals and Offices.	January	March.	April.	May.	June.	July.	August.	September	October.	November.	December.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
WELLAND CANAL.												
Chippawa.....				4 78	13 39	10 84	1 25	6 68	11 96	8 69	.....	57 59
Colborne.....			6,776 65	17,506 94	14,726 21	21,857 75	19,739 73	21,775 21	17,660 46	11,012 86	3,773 29	134,829 10
Dalhousie.....		5 32	2,376 29	3,070 03	5,696 83	5,813 66	6,798 91	9,136 71	8,940 77	9,956 23	674 43	52,469 18
Dunnville.....				12 92	61 17	74 15	71 71	23 17	5 51	62 13	4 70	315 46
St. Catharines.....		6 46	.....	27 94	.....	.....	.....	.....	.....	.....	.....	27 94
Total Welland Canal.....		11 78	9,217 52	20,679 53	20,597 51	27,897 90	26,722 22	31,058 32	26,677 20	21,117 77	4,452 42	188,432 17
ST. LAWRENCE CANALS.												
Beauharnois.....				53 15	111 44	71 56	65 20	146 93	64 64	36 66	.....	549 58
Cardinal.....			2 51	67 12	61 88	117 90	55 11	60 29	12 45	44 09	26 00	447 35
Cornwall.....				5,205 77	4,818 64	3,813 90	4,402 44	4,331 34	4,096 48	4,372 72	148 63	31,189 92
Kingston.....			356 11	1,240 53	643 62	1,119 18	916 27	1,396 04	1,780 70	2,016 75	.....	9,469 20
Lachine.....				263 83	402 52	445 59	581 17	695 03	289 59	170 34	.....	2,848 07
Montreal.....				3,567 11	3,632 50	4,390 57	4,289 50	3,572 06	3,470 11	3,282 00	10 12	26,213 97
Total St. Lawrence Canals.....			358 62	10,397 51	9,670 60	9,958 70	10,309 69	10,201 69	9,713 97	9,922 56	184 75	70,718 09
CHAMBLEY CANAL.												
Chambley.....				1,245 80	2,624 09	2,142 61	1,851 85	1,698 54	1,176 17	844 61	.....	11,583 67
St. John.....				2,681 99	1,493 62	1,784 02	1,438 50	1,405 57	1,326 91	1,003 51	.....	11,134 12
St. Ours.....			18 07	67 21	62 12	109 05	68 11	70 82	103 58	91 78	.....	590 74
Total Chambley Canal.....			18 07	3,995 00	4,179 83	4,035 68	3,358 46	3,174 93	2,606 66	1,939 90	.....	23,308 53



Department of Railways and Canals.

OTTAWA CANALS.										
Ottawa . . . . .	1,046 21	5,202 95	6,525 55	5,165 35	3,792 32	2,988 64	2,114 72	2,013 70	.....	28,849 44
Carillon . . . . .	0 50	4 60	866 64	463 83	6 68	6 79	1 99	11 75	.....	1,365 78
Grenville . . . . .	47 19	357 59	279 90	151 20	552 34	496 94	389 32	522 13	.....	2,796 61
Ste. Anne's . . . . .	5 38	96 53	174 44	179 20	214 84	196 35	98 19	55 52	.....	1,020 45
Total Ottawa Canals . . . . .	1,099 28	5,661 67	7,846 53	5,959 58	4,566 18	3,688 72	2,607 22	2,603 10	.....	34,032 28
RIDEAU CANAL.										
Kingston Mills. . . . .	.....	123 34	203 81	238 60	225 39	157 63	76 16	25 50	.....	1,050 43
Ottawa . . . . .	.....	299 51	556 94	919 87	1,058 06	751 16	749 37	162 00	.....	4,496 91
Smith's Falls. . . . .	.....	65 06	85 01	117 25	106 82	103 44	60 48	45 95	.....	584 01
Total Rideau Canal . . . . .	.....	487 91	845 76	1,275 72	1,390 27	1,012 23	886 01	233 45	.....	6,131 35
ST. PETER'S CANAL.										
St. Peter's . . . . .	0 78	5 18	30 44	215 57	422 98	361 49	423 10	335 21	189 78	2,844 70
TRENT VALLEY CANALS.										
Bobcaygeon . . . . .	0 25	1 50	63 75	92 04	76 46	77 40	71 27	26 01	.....	423 79
Buckhorn . . . . .	.....	5 50	3 60	6 70	16 60	19 50	33 90	4 75	.....	90 55
Burleigh . . . . .	.....	4 89	10 02	8 60	11 45	4 71	3 35	1 50	.....	44 52
Renelon Falls . . . . .	.....	5 50	8 12	41 83	45 78	24 48	17 00	5 52	.....	148 23
Hastings . . . . .	.....	2 75	3 50	9 65	5 25	5 25	20 75	10 90	.....	58 05
Peterborough . . . . .	.....	6 72	41 68	85 48	66 44	55 99	29 34	13 92	.....	325 51
Total Trent Valley Canals . . . . .	0 25	8 22	130 67	244 30	221 98	187 33	175 61	62 60	.....	1,095 65
MURRAY CANAL.										
Brighton. . . . .	.....	71 81	73 30	115 15	148 52	93 79	79 97	70 68	.....	655 01
Grand total . . . . .	0 78	17 21	10,733 94	41,573 69	47,078 81	49,885 55	43,169 74	36,285 27	4,826 95	327,217 78

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

APPENDIX A—Continued.

No. (A) 17.—SUMMARY STATEMENT showing the Number, Tonnage and Nationality of Vessels passed through all the Canals during the Season of Navigation ended the 31st December, 1897, and the amount of Tolls collected thereon.

Vessels.	Total Number.		From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
WELLAND CANAL.														
Canadian vessels, steam	1,062	124,285	130,917											\$ cts
do sail	526	44,271	41,503							2,619	73,669	205,389	410,626	4,722 21
										193	47,463	88,448	178,501	3,716 21
Total Canadian	1,588	168,556	172,420							2,812	121,132	293,837	589,127	8,438 42
United States vessels, steam	849		146											
do sail	288	1,104								375	139,757	387,235	770,093	11,551 91
										2	56,860	86,808	173,041	3,902 57
Total United States	1,137	1,106	146							377	196,617	474,043	943,134	15,454 48
Grand total, Welland Canal	2,725	169,662	172,566							3,189	317,749	767,880	1,532,261	23,892 90
ST. LAWRENCE CANALS.														
Canadian vessels, steam	4,028	356,104	293,567											
do sail	6,092	729,833	516,276											
Total Canadian	10,120	1,085,937	809,843											
United States vessels, steam	413	439	1,537											
do sail	604	2,300	12,436											
Total United States	1,017	2,739	13,973											
Grand total, St. Lawrence Canals.	11,137	1,088,676	823,816											
CHAMBLEY CANAL.														
Canadian vessels, steam	480	37,969	41,219											
do sail	476	6,460	8,731											
Total Canadian	956	44,429	49,950											

# Department of Railways and Canals.

United States vessels, steam	16	.....	.....	.....	7	.....	286	345	300	645	5 22
do sail	2,127	2,035	2,366	91,166	.....	.....	111,090	93,201	113,456	206,657	2,590 64
Total United States	2,143	2,035	2,366	91,511	7	.....	111,376	93,546	113,756	207,302	2,595 86
Grand total, Chamblay Canal	3,099	46,464	52,316	99,517	7	.....	124,276	145,981	176,606	322,587	3,341 23
OTTAWA CANALS.											
Canadian vessels, steam	905	42,934	97,037	.....	234	.....	.....	42,934	97,271	140,205	606 62
do sail	1,148	3,724	133,082	.....	8,735	.....	.....	3,724	141,817	145,541	2,057 01
Total Canadian	2,053	46,658	230,119	.....	8,969	.....	.....	46,658	239,088	285,746	2,663 63
United States vessels, steam	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do sail	145	2,489	159	.....	11,150	504	.....	2,993	11,309	14,302	331 53
Total United States	145	2,489	159	.....	11,150	504	.....	2,993	11,309	14,302	331 53
Grand total, Ottawa Canals	2,198	49,147	230,278	.....	20,119	504	.....	49,651	250,397	300,048	2,995 16
RIDEAU CANAL.											
Canadian vessels, steam	1,721	51,102	51,565	1,012	148	222	1,631	52,336	53,344	105,680	739 58
do sail	647	14,738	14,785	1,601	.....	.....	2,135	16,339	16,920	33,259	492 73
Total Canadian	2,368	65,840	66,350	2,613	148	222	3,766	68,675	70,264	138,939	1,232 31
United States vessels, steam	47	47	29	194	.....	.....	376	241	405	646	12 41
do sail	138	2,766	1,069	1,571	4,882	.....	1,550	4,337	7,501	11,838	265 73
Total United States	185	2,813	1,098	1,765	4,882	.....	1,926	4,578	7,906	12,484	278 14
Grand total, Rideau Canal	2,553	68,653	67,448	4,378	5,030	222	5,692	73,253	78,170	151,423	1,510 45
ST. PETER'S CANAL.											
Canadian vessels, steam	154	18,691	12,237	.....	.....	.....	.....	18,691	12,237	30,928	618 56
do sail	1,470	37,497	36,225	.....	.....	.....	.....	37,497	36,225	73,722	1,478 05
Total Canadian	1,624	56,188	48,462	.....	.....	.....	.....	56,188	48,462	104,650	2,096 61
United States vessels, steam	2	93	494	.....	.....	.....	.....	93	494	587	11 74
do sail	7	3,271	.....	.....	.....	.....	.....	3,271	.....	3,271	65 42
Total United States	9	3,364	494	.....	.....	.....	.....	3,364	494	3,858	77 16
Grand total, St. Peter's Canal	1,633	59,552	48,956	.....	.....	.....	.....	59,552	48,956	108,508	2,173 77



No. (A) 17.—SUMMARY STATEMENT showing the Number, Tonnage and Nationality of Vessels, &c.—Continued.

Vessels.	Total Number.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
		Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
TRENT VALLEY CANALS.													
Canadian vessels, steam.....	1,348	29,139	28,691							29,139	28,691	57,830	\$ 360 96
do sail.....	787	23,836	24,818							23,836	24,818	48,654	177 45
Total Canadian.....	2,135	52,975	53,509							52,975	53,509	106,484	538 41
United States vessels, steam.....													
do sail.....													
Total United States.....													
Grand total, Trent Valley Canals.....	2,135	52,975	53,509							52,975	53,509	106,484	538 41
MURRAY CANAL.													
Canadian vessels, steam....	508	106,542	49,597	14,202				499	10,479	121,243	60,076	181,319	192 65
do sail.....	114	2,067	2,701	760					110	2,827	2,811	5,638	27 13
Total Canadian.....	622	108,609	52,298	14,962				499	10,589	124,070	62,887	186,957	219 78
United States vessels, steam.....	8	58	37		79			14		72	116	188	2 00
do sail.....	21	62	94	129				8	62	211	156	367	4 88
Total United States.....	29	120	131	129	79			22	62	283	272	555	6 88
Grand total, Murray Canal.....	651	108,729	52,429	15,091	79			521	10,651	124,353	63,159	187,512	226 66

Department of Railways and Canals.

RECAPITULATION.

Vessels.	Total Number.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Total Tons.	Amount of Tolls.
		Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.				
CANADIAN VESSELS. (Steam and Sail.)													
Welland.....	1,588	168,556	172,420	122,469	1,738	.....	.....	2,812	121,132	293,837	295,290	589,127	8,438 42
St. Lawrence .....	10,120	1,085,937	809,843	67,735	523	.....	.....	.....	149,511	1,153,672	959,877	2,113,549	21,149 97
Chambly.....	956	44,429	49,950	8,006	.....	.....	.....	.....	12,900	52,435	62,850	115,285	745 37
Ottawa.....	2,053	46,658	230,119	.....	8,969	.....	.....	.....	.....	46,658	239,088	285,746	2,663 63
Rideau .....	2,368	65,840	66,350	2,613	148	.....	.....	222	3,766	68,675	70,264	138,939	1,232 31
St. Peter's.....	1,624	56,188	48,462	.....	.....	.....	.....	.....	.....	56,188	48,462	104,650	2,096 61
Trent Valley.....	2,135	52,975	53,509	.....	.....	.....	.....	.....	.....	52,975	53,509	106,484	588 41
Murray.....	622	108,609	52,298	14,962	.....	.....	.....	499	10,589	124,070	62,887	186,957	219 78
Total Canadian .....	21,466	1,629,192	1,482,951	215,785	11,378	.....	.....	3,533	297,898	1,848,510	1,792,227	3,640,737	37,084 50
UNITED STATES VESSELS. (Steam and Sail.)													
Welland.....	1,137	1,106	146	139,464	271	333,096	272,057	377	196,617	474,043	469,091	943,134	15,454 48
St. Lawrence.....	1,017	2,739	13,973	36,561	1,229	5,830	5,281	25,438	37,717	70,568	58,200	128,768	1,277 35
Chambly.....	2,143	2,035	2,366	91,511	7	.....	7	.....	111,876	93,546	113,756	207,302	2,595 86
Ottawa.....	145	2,489	159	.....	11,150	.....	.....	504	.....	2,993	11,309	14,302	331 53
Rideau .....	185	2,813	1,098	1,765	4,882	.....	.....	.....	1,926	4,578	7,906	12,484	278 14
St. Peter's.....	9	3,364	494	.....	.....	.....	.....	.....	.....	3,364	494	3,858	77 16
Trent Valley.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Murray.....	29	120	131	129	79	12	.....	22	62	283	272	555	6 88
Total United States.....	4,675	14,666	18,367	269,430	17,618	338,938	277,345	26,341	347,698	649,375	661,028	1,310,403	20,021 40
Grand total, Canadian and United States .....	26,141	1,643,858	1,501,318	485,215	28,996	338,938	277,345	29,874	645,596	2,497,885	2,453,255	4,951,140	57,105 90

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, 15th October, 1898.

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

APPENDIX A.—Continued.

No. (A) 18. COMPARATIVE STATEMENT of Grand Total Freight passed through the undermentioned Canals during the Seasons of Navigation of 1896 and 1897, and the Amount of Tolls collected on the same, including Tolls on Vessels and Passengers.

Canals.	From Canadian to Canadian Ports.		From Canadian to United States Ports.		From United States to United States Ports.		From United States to Canadian Ports.		Tons.		Amount of Tolls.	
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.		
1896.												
Welland	10,833	194,279									\$ cts.	
St. Lawrence.	167,278	653,282	8,536	6,015	267,773	385,695	4,127	402,729	291,269	988,718	194,969 33	
Chambly	9,680	9,779	6,213	2,742	257	684	43,419	239,815	217,167	896,523	70,004 24	
Ottawa	381	459,433	221,526	60				103,890	231,206	113,729	344,935	24,150 74
Rideau	31,370	10,375	16,022	42,232				12,250	381	501,665	502,046	30,506 56
St. Peter's	15,456	44,525		3,290					47,392	25,915	73,307	5,011 10
Trent Valley.	16,487	4,658		4,100			1,427		16,883	48,625	65,508	655 08
Murray.	6,170	5,968	739					179	16,487	4,658	21,145	823 62
Sault Ste. Marie.	35,698	237,369	6,623	42,080	929,215	3,149,675	68,562	108,177	6,909	6,147	13,056	605 04
Grand total	293,353	1,619,668	259,659	100,519	1,197,245	3,536,054	117,535	867,040	1,867,792	6,123,281	7,991,073	326,725 71
1897.												
Welland.	6,478	175,480										
St. Lawrence.	150,563	757,205	5,613	4,518	210,831	353,863	1,277	516,232	224,199	1,050,093	1,274,292	188,432 17
Chambly	8,106	7,747	4,491	1,809	128	759	32,979	283,431	188,161	1,043,204	1,231,365	70,718 09
Ottawa	81	511,262	241,906	174				94,203	250,012	102,124	352,136	23,308 53
Rideau.	34,244	13,177		51,027				11,500	81	562,289	562,370	34,032 28
St. Peter's	18,317	48,776	9,679	8,393			283		44,206	33,070	77,276	6,131 35
Trent Valley.	29,586	6,555							18,317	48,776	67,093	2,844 70
Murray.	5,897	6,525							29,586	6,555	36,141	1,095 65
Sault Ste. Marie.	22,315	186,547	6,425	122,039	458,183	4,014,692	74,248	62,614	6,483	6,748	13,231	655 01
Grand total	275,587	1,713,274	268,700	187,960	669,142	4,369,314	108,787	968,203	1,322,216	7,238,751	8,560,967	327,217 78

DEPARTMENT OF RAILWAYS AND CANALS,

OTTAWA, 15th October, 1898.

RICHARD DEVLIN,

Compiler of Canal Statistics.



# Department of Railways and Canals.

## APPENDIX A—Continued.

No. (A) 19.—STATEMENT of the Number and Tonnage of all kinds of Vessels passed through the Canals during the Season of Navigation in 1897.

### WELLAND CANAL.

CANADIAN.					UNITED STATES.			
Steam Vessels.			Sailing Vessels.		Steam Vessels.		Sailing Vessels.	
Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.
8	18	144	21	168	8	64	12	96
10	6	60	15	150	6	60	2	20
15	2	30	4	60	9	135	4	60
20	1	20	3	60	4	80	1	20
25	5	125			1	25	2	50
30	9	270			2	60		
35	9	315			4	140	1	35
40			6	240	3	120	4	160
45	1	45	2	90	3	135		
50	2	100	1	50	1	50	4	200
55					1	55		
60	1	60	4	240	2	120	6	360
65	2	130	2	130			1	65
70	2	140						
75			1	75	3	225	3	225
85	2	170	1	85	1	85		
90	3	270	1	90				
95	1	95						
100	1	100	2	200			1	100
110			2	220	1	110	3	330
120					1	120	3	360
125			1	125	1	125		
135	1	135	1	135				
140			2	280				
145							1	145
150			5	750			3	450
160	2	320	2	320				
165	1	165	1	165				
175					1	175		
180			2	360				
190			5	950				
200	2	400	4	800			1	200
210	2	420						
220	1	220			2	440		
225	1	225	2	450				
230					1	230		
245	1	245	3	735				
260	1	260	1	260	1	260	3	780
265	1	265					2	530
270			2	540	1	270	2	540
275			2	550			1	275
280			2	560	2	560	2	560
285							2	570
290	1	290	5	1,450			1	290
295	1	295	1	295			1	295
300			2	600	1	300	1	300
305	3	945	1	305			1	305
310	1	310	2	630	1	310	3	930
315	1	315					3	945
320	1	320	2	640			2	640
325			4	1,300	2	650	1	325
330							1	330
335			4	1,440	1	335		
360	1	360					4	1,440
365			1	365	4	1,460		

APPENDIX A—Continued.

No. (A) 19.—STATEMENT of the Number and Tonnage of all kinds of Vessels,  
&c.—Continued.

WELLAND CANAL.—Continued.

CANADIAN.					UNITED STATES.			
Steam Vessels.			Sailing Vessels.		Steam Vessels.		Sailing Vessels.	
Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.
375			1	375			1	375
390					1	390	1	390
400					2	800	2	800
405	1	405						
415	1	415						
425					2	850	1	425
430					1	430	1	430
435			2	870				
440	2	880					1	440
450					1	450		
455	1	455					1	455
460			3	1,380				
465	1	465			1	465		
470							3	1,410
480	1	480	1	480	1	480	4	1,920
485	1	485	1	485			1	485
490					1	490	2	980
495					1	495		
500	2	1,000					2	1,000
505							2	1,010
510	1	510			1	510		
515	1	515					2	1,030
520			3	1,560			1	520
525					1	525	1	525
530	1	530						
540					2	1,090	2	1,090
545	2	1,090	1	545			1	
555					3	1,665	2	1,110
560	1	560			2	1,120		
570					2	1,140		
575	2	1,150						
580							3	1,740
585			1	585	1	585	2	1,170
590			1	590	1	590	2	1,180
595							1	595
600	1	600			2	1,200	4	2,400
605					1	605	2	1,210
615					2	1,230		
620					2	1,240	3	1,860
625					2	1,250	1	625
635							2	1,270
640					1	640	1	640
645					1	645		
655					2	1,310	1	655
660					1	660		
665							2	1,330
680					2	1,360	1	680
685			1	685			3	2,055
695					2	1,390	2	1,390
700					1	700	1	700
707							2	1,414
710					1		2	1,438
719			1	719				
722	1	722						
725					1	725		

# Department of Railways and Canals.

No. (A) 19.—STATEMENT of the Number and Tonnage of all kinds of Vessels,  
&c.—*Continued.*

## WELLAND CANAL—*Continued.*

CANADIAN.					UNITED STATES.			
Steam Vessels.			Sailing Vessels.		Steam Vessels.		Sailing Vessels.	
Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.
730							1	730
740			1	740			4	2,960
760	1	760			2	1,520		
769	1	769						
771	1	771						
775					1	775		
780					1	780	1	780
787					4	3,148	1	787
796					3	2,388	1	796
797					1	797		
802			1	802				
837					2	1,674		
838					1	838	1	838
859					1	859	2	1,718
870							2	1,740
873							1	873
882					1	882		
891							1	891
892	1	892			1	892		
898							1	898
904					1	904		
908			1	908				
911					2	1,822		
915					1	915		
917							1	917
918					1	918		
928					1	928		
929	1	929			1	929		
940					2	1,880		
944					1	944		
950					2	1,900		
960					1	960	1	960
962					1	962		
968					2	1,954		
977	1	977						
978					1	978		
985					1	985		
989	1	989						
994							4	3,976
997					2	1,994		
1,013					1	1,013		
1,014							2	2,028
1,022					1	1,022		
1,029					1	1,029	1	1,029
1,030					1	1,030		
1,035	1	1,035			1	1,035		
1,038					2	2,076		
1,040			1	1,040	1	1,040		
1,053							1	1,053
1,054					3	3,162		
1,072	1	1,072			1	1,072	1	1,072
1,075					1	1,075		
1,083					1	1,083	1	1,083
1,085							1	1,085



No. (A) 19.—STATEMENT of the Number and Tonnage of all kinds of Vessels  
&c.—*Concluded.*

WELLAND CANAL—*Concluded.*

CANADIAN.					UNITED STATES.			
Steam Vessels.			Sailing Vessels.		Steam Vessels.		Sailing Vessels.	
Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.
1,103					4	4,412		
1,111					2	2,222		
1,118					1	1,118	1	1,118
1,123					3	3,369		
1,168					2	2,336	1	1,168
1,170					1	1,170		
1,172	1	1,172						
1,180					1	1,180	1	1,180
1,182					1	1,182		
1,185							1	1,185
1,203					2	2,406		
1,206					2	2,412		
1,425					3	4,275		
1,441					2	2,882	1	1,441
1,547					1	1,547		
1,548					1	1,548		
1,550					1	1,550		
1,553					2	3,106		
1,565					1	1,565		
Total....	117	27,192	142	27,627	195	118,172	181	80,984

# Department of Railways and Canals.

## APPENDIX A—Continued.

No. (A) 20.—STATEMENT of the Number and Tonnage of all kinds of Vessels passed through the Canals during the Season of Navigation in 1897.

### ST. LAWRENCE CANALS.

CANADIAN.					UNITED STATES.			
Steam Vessels.			Sailing Vessels.		Steam Vessels.		Sailing Vessels.	
Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.
8	60	480	24	192	3	24	.....	.....
10	17	170	7	70	.....	.....	1	10
15	18	270	4	60	3	45	.....	.....
20	9	180	14	280	1	20	.....	.....
25	18	390	3	75	2	50	2	50
30	17	510	10	300	.....	.....	.....	.....
35	8	280	1	35	.....	.....	.....	.....
40	12	480	6	240	1	40	1	40
45	4	180	3	135	1	45	.....	.....
50	10	500	11	550	.....	.....	.....	.....
55	5	275	1	55	.....	.....	.....	.....
60	9	540	24	1,440	.....	.....	.....	.....
65	2	130	4	260	1	65	1	65
70	2	140	10	700	.....	.....	1	70
75	5	375	3	225	1	75	.....	.....
80	4	320	6	480	.....	.....	.....	.....
85	5	425	5	425	.....	.....	3	255
90	3	270	4	360	1	90	6	540
95	2	190	12	1,140	1	95	29	2,755
100	7	700	12	1,200	.....	.....	45	4,500
105	5	525	9	945	.....	.....	14	1,470
110	3	330	10	1,100	1	110	9	990
115	2	230	10	1,150	.....	.....	5	575
120	3	360	8	960	.....	.....	4	480
125	1	125	5	625	.....	.....	2	250
130	2	260	3	390	.....	.....	.....	.....
135	1	135	9	1,215	.....	.....	.....	.....
140	1	140	7	980	.....	.....	.....	.....
145	3	435	10	1,450	.....	.....	.....	.....
150	.....	.....	20	3,000	.....	.....	.....	.....
155	2	310	35	5,425	.....	.....	.....	.....
160	.....	.....	16	2,560	.....	.....	.....	.....
165	5	825	15	2,475	.....	.....	.....	.....
170	1	170	5	850	.....	.....	.....	.....
175	.....	.....	3	525	.....	.....	.....	.....
180	.....	.....	4	720	.....	.....	.....	.....
185	.....	.....	5	925	.....	.....	.....	.....
190	2	380	5	950	.....	.....	.....	.....
195	.....	.....	3	585	.....	.....	.....	.....
200	3	600	3	600	.....	.....	.....	.....
205	.....	.....	1	205	.....	.....	1	205
220	.....	.....	2	440	.....	.....	.....	.....
230	1	230	5	1,150	.....	.....	.....	.....
255	1	255	2	510	.....	.....	.....	.....
260	1	260	3	680	.....	.....	.....	.....
265	1	265	2	530	.....	.....	.....	.....
270	.....	.....	2	540	.....	.....	.....	.....
275	1	275	2	550	.....	.....	.....	.....
285	.....	.....	2	570	1	285	1	285
290	1	290	2	580	.....	.....	1	290
300	.....	.....	4	1,200	.....	.....	.....	.....
305	1	305	3	915	.....	.....	.....	.....
310	.....	.....	3	930	.....	.....	.....	.....
315	.....	.....	2	630	.....	.....	.....	.....

No. (A) 20.—STATEMENT of the Number and Tonnage of all kinds of Vessels, &c.—  
*Concluded.*ST. LAWRENCE CANALS—*Concluded.*

CANADIAN.					UNITED STATES.			
Steam Vessels.			Sailing Vessels.		Steam Vessels.		Sailing Vessels.	
Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.
320	1	.....	3	960	.....	.....	.....	.....
325	.....	325	6	1,950	.....	.....	.....	.....
330	1	.....	2	660	.....	.....	.....	.....
335	1	335	4	1,340	.....	.....	.....	.....
340	.....	340	3	1,020	.....	.....	.....	.....
345	2	345	3	1,035	.....	.....	1	345
350	.....	.....	1	350	.....	.....	.....	.....
360	.....	.....	2	720	.....	.....	.....	.....
365	2	730	3	1,095	.....	.....	.....	.....
370	.....	.....	5	1,850	.....	.....	.....	.....
375	.....	.....	2	750	.....	.....	.....	.....
390	.....	.....	1	390	.....	.....	.....	.....
395	2	790	1	395	.....	.....	.....	.....
411	1	.....	1	411	.....	.....	.....	.....
415	.....	.....	1	415	.....	.....	.....	.....
433	1	.....	.....	.....	.....	.....	1	433
436	1	.....	1	436	.....	.....	.....	.....
442	2	884	1	442	.....	.....	.....	.....
450	.....	.....	3	1,350	.....	.....	.....	.....
454	1	454	.....	.....	.....	.....	.....	.....
471	1	471	1	471	.....	.....	.....	.....
473	.....	.....	.....	.....	.....	.....	1	475
475	.....	.....	1	475	.....	.....	.....	.....
487	.....	.....	2	974	.....	.....	.....	.....
500	1	500	1	500	.....	.....	.....	.....
508	1	508	.....	.....	.....	.....	.....	.....
509	1	509	.....	.....	.....	.....	.....	.....
516	.....	.....	2	1,032	.....	.....	.....	.....
518	.....	.....	1	518	.....	.....	.....	.....
520	.....	.....	1	520	.....	.....	.....	.....
539	.....	.....	1	539	.....	.....	.....	.....
541	1	541	2	1,082	.....	.....	.....	.....
575	1	575	1	575	.....	.....	.....	.....
586	2	1,172	3	1,758	.....	.....	.....	.....
590	.....	.....	1	590	.....	.....	.....	.....
593	1	593	.....	.....	.....	.....	.....	.....
599	1	599	1	599	.....	.....	.....	.....
628	.....	.....	1	628	.....	.....	.....	.....
678	1	678	.....	.....	.....	.....	.....	.....
681	.....	.....	1	681	.....	.....	.....	.....
690	1	690	.....	.....	.....	.....	.....	.....
715	1	715	1	715	.....	.....	.....	.....
771	.....	.....	3	2,313	.....	.....	.....	.....
803	.....	.....	1	803	.....	.....	.....	.....
989	1	989	.....	.....	.....	.....	.....	.....
1,167	1	1,167	.....	.....	.....	.....	.....	.....
Total....	288	27,420	452	75,424	17	944	129	14,083



# Department of Railways and Canals.

## APPENDIX A—Continued.

No. (A) 21.—STATEMENT of the Number and Tonnage of all kinds of Vessels passed through the Canals during the Season of Navigation in 1897.

### RIDEAU, OTTAWA AND CHAMBLY CANALS.

CANADIAN.					UNITED STATES.			
Steam Vessels.			Sailing Vessels.		Steam Vessels.		Sailing Vessels.	
Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.	Number.	Total Tonnage.
8	30	240	71	568	4	32		
10	11	110	25	250	8	80	3	30
15	6	90	4	60				
20	5	100	11	220			1	20
25	4	100	5	125				
30	1	30	4	120				
40	5	200	5	200	1	40	1	40
45			4	180				
50	5	250	4	200	1	50	3	150
55	3	165	1	55				
60	2	120	2	120	2	120	2	120
65			2	130			7	455
70	2	140			1	70	7	490
75	1	75	13	975			3	225
80	2	160	5	400			5	400
85	2	170	2	170			17	1,445
90	1	90	9	810	1	90	45	4,050
95	1	95	8	760			122	11,590
100	1	100	7	700			125	12,500
105	1	105	5	525			43	4,515
110			4	440			26	2,860
115	1	115	5	575			13	1,495
120			7	840			3	360
125	2	250	4	500			1	125
130			4	520			3	390
135	1	135	7	945				
140			14	1,960				
145	2	290	11	1,595			1	145
150	1	150						
155	1	155	24	3,720				
160			9	1,440				
165			9	1,485			1	165
170			5	850				
175			2	350				
180			3	540				
185			1	185				
190			1	190				
195			2	390				
200			1	200				
228	1	228	1	228				
256			1	256				
262	1	262						
324	1	324	1	324				
332	1	332	1	332				
397	1	397						
691	1	691						
Total. ....	97	5,669	304	24,433	18	482	432	41,570

APPENDIX A—Concluded.

No. (A) 22.—STATEMENT showing the Classified Tonnage of all kinds of Vessels passed through the Canals during the Season of Navigation in 1897.

WELLAND CANAL.

CANADIAN.						UNITED STATES.					
Class.	Steam Vessels.	No.	Tonnage.	Class.	Sailing Vessels.	No.	Tonnage.	Class.	Steam Vessels.	No.	Tonnage.
1	250 to 1,565 tons....	41	22,988	1	250 to 1,040 tons..	49	20,699	1	250 to 1,565 tons..	140	115,618
2	200 " 249 " ....	7	1,510	2	200 " 249 " ....	9	1,985	2	200 " 249 " ....	3	670
3	150 " 199 " ....	3	485	3	150 " 199 " ....	15	2,545	3	150 " 199 " ....	1	175
4	100 " 149 " ....	2	235	4	100 " 149 " ....	8	960	4	100 " 149 " ....	3	355
5	50 " 99 " ....	13	965	5	50 " 99 " ....	10	670	5	50 " 99 " ....	8	532
6	Under 50 " ....	51	1,009	6	Under 50 " ....	51	768	6	Under 50 " ....	14	819
Total.....			27,192	Total . . . . .			27,627	Total.....			118,172
			117				142				195
											181
											80,984

ST. LAWRENCE CANALS.

Class.	Steam Vessels.	No.	Tonnage.	Class.	Sailing Vessels.	No.	Tonnage.	Class.	Steam Vessels.	No.	Tonnage.
1	250 to 1,167 tons....	36	15,560	1	250 to 803 tons....	95	37,977	1	250 to 285 tons....	1	285
2	200 " 249 " ....	4	830	2	200 " 249 " ....	11	2,395	2	200 " 249 " ....	5	1,828
3	150 " 199 " ....	10	1,685	3	150 " 199 " ....	111	18,015	3	150 " 199 " ....	1	205
4	100 " 149 " ....	28	3,240	4	100 " 149 " ....	83	10,015	4	100 " 149 " ....	79	8,265
5	50 " 99 " ....	47	3,165	5	50 " 99 " ....	30	5,635	5	50 " 99 " ....	40	3,685
6	Under 50 " ....	163	2,940	6	Under 50 " ....	72	1,387	6	Under 50 " ....	4	100
Total.....			27,420	Total.....			75,424	Total.....			14,083
			288				452				129

RIDEAU, OTTAWA AND CHAMBLY CANALS.

1	250 to 691 tons.....	5	2,006	1	250 to 332 tons.....	3	912	1	250 to --- tons.....	.....	.....	1	250 to --- tons.....	.....	.....
2	200 " 249 " .....	1	228	2	200 " 249 " .....	2	428	2	200 " 249 " .....	.....	.....	2	200 " 249 " .....	.....	.....
3	150 " 199 " .....	2	305	3	150 " 199 " .....	56	9,150	3	150 " 199 " .....	.....	.....	3	150 " 199 " .....	.....	165
4	100 " 149 " .....	8	995	4	100 " 149 " .....	68	8,600	4	100 " 149 " .....	.....	.....	4	100 " 149 " .....	.....	22,390
5	50 " 99 " .....	19	1,265	5	50 " 99 " .....	46	3,620	5	50 " 99 " .....	.....	.....	5	50 " 99 " .....	.....	18,925
6	Under 50 " .....	62	870	6	Under 50 " .....	129	1,723	6	Under 50 " .....	.....	.....	6	Under 50 " .....	.....	90
	Total.....	97	5,669		Total.....	304	24,433		Total.....	18	482		Total.....	432	41,570

RICHARD DEVLIN,  
*Compiler of Canal Statistics.*

DEPARTMENT OF RAILWAYS AND CANALS.  
OTTAWA, 15th October, 1898.



CANALS

CONSOLIDATED

Sec. 1.

No. 23.—RATES OF TOLLS ON THE CANALS

WELLAND, ST. LAWRENCE, RIDEAU, OTTAWA, CHAMBLY AND MURRAY CANALS.

(O. C., April 18, 1873.)

The Rates of Tolls are divided into Six Classes, as under, and are per ton, unless otherwise specified.	Welland Canal, westward.	Welland Canal, eastward.	Lake Erie to Montreal.	St. Lawrence Canals, each way.	Chambly Canal and St. Ours Lock.	Rideau Canal, each way.	Ottawa Canals, and Ann's Lock, each way.	Ottawa to St. Johns, each way.	Murray Canal, each way.
<i>Class No. 1.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Vessel, steam..... per ton	01 $\frac{1}{4}$	0 01 $\frac{1}{4}$	0 02 $\frac{1}{4}$	0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 01 $\frac{1}{4}$	0 00 $\frac{3}{4}$	0 01 $\frac{1}{4}$	0 $\frac{3}{4}$
do sail and other.....	0 02 $\frac{1}{4}$	0 02 $\frac{1}{4}$	0 03 $\frac{1}{4}$	0 01 $\frac{1}{4}$	0 01 $\frac{1}{4}$	0 02 $\frac{1}{4}$	0 01	0 02 $\frac{1}{4}$	0 $\frac{1}{16}$
<i>Class No. 2.</i>									
Passengers, 21 years of age and upwards...	0 10	0 10	0 20	0 10	0 05	0 08	0 02 $\frac{1}{4}$	0 09 $\frac{3}{4}$	0 1 $\frac{1}{4}$
Passengers, under 21 years each.....	0 05	0 05	0 10	0 05	0 02	0 04	0 01 $\frac{1}{4}$	0 04 $\frac{1}{2}$	0 0 $\frac{5}{8}$
<i>Class No. 3.</i>									
Bricks, cement and water lime.....	15	0 20	0 20	0 15	0 10	0 07	0 06	0 19 $\frac{3}{4}$	0 1 $\frac{7}{8}$
Clay, lime and sand.....									
Brimstone .....									
Corn.....									
Flour.....									
Iron, railway .....									
do pig .....									
do all other, including steel (O.C., Feb. 1, 1888.) .....									
Plaster, gypsum.....									
Salt.....									
Salt meats or fish, in barrels or otherwise..									
Agricultural products, vegetable, not enu- merated.....									
Agricultural products, animal, not enumer- ated.....									
Stone, for cutting.....									
Wheat.....									
<i>Class No. 4.</i>									
All other articles, not enumerated.....	0 15	0 20	0 20	0 20	0 10	0 26	0 14	0 29	0 2 $\frac{1}{2}$

Department of Railways and Canals.

REVENUE

TARIFF OF TOLLS

OF THE DOMINION OF CANADA, 1897.

TRENT VALLEY CANALS.

(O.C., July 25, 1888.)

1ST SECTION.	2ND SECTION.	3RD SECTION.	4TH SECTION.	THROUGH.	Peterborough to Hastings, each way.
Fenelon Falls to Bobcaygeon.	Bobcaygeon to Buckhorn.	Buckhorn to Burleigh.	Burleigh to Lakefield.	Fenelon Falls to Lakefield.	
Tolls Charge- able at Fenelon Falls.	Tolls Charge- able at Bobcaygeon.	Tolls Charge- able at Buckhorn.	Tolls Charge- able at Burleigh.	Tolls Charge- able at Fenelon Falls.	Tolls Chargeable at Peterborough and Hastings.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
0 00 <sup>3</sup> / <sub>16</sub> 0 00 <sup>1</sup> / <sub>4</sub>	0 00 <sup>3</sup> / <sub>16</sub> 0 00 <sup>1</sup> / <sub>4</sub>	0 00 <sup>3</sup> / <sub>16</sub> 0 00 <sup>1</sup> / <sub>4</sub>	0 00 <sup>3</sup> / <sub>16</sub> 0 00 <sup>1</sup> / <sub>4</sub>	0 00 <sup>3</sup> / <sub>4</sub> 0 01	0 00 <sup>3</sup> / <sub>16</sub> 0 00 <sup>1</sup> / <sub>4</sub>
0 01 0 00 <sup>1</sup> / <sub>2</sub>	0 01 0 00 <sup>1</sup> / <sub>2</sub>	0 01 0 00 <sup>1</sup> / <sub>2</sub>	0 01 0 00 <sup>1</sup> / <sub>2</sub>	0 04 0 02	0 01 0 00 <sup>1</sup> / <sub>2</sub>
0 01	0 01	0 01	0 01	0 04	01
0 03	0 03	0 03	0 03	0 12	0 03

## RATES OF TOLLS

WELLAND, ST. LAWRENCE, RIDEAU, OTTAWA, CHAMBLY AND MURRAY CANALS.

	The Rates of Tolls are divided into Six Classes, as under, and are per ton, unless otherwise specified.								
	Welland Canal, westward.	Welland Canal, eastward.	Lake Erie to Montreal.	St. Lawrence Canals, each way.	Chambly Canal and St. Ours Lock, each way.	Rideau Canal, each way.	Ottawa Canals and St. Ann's Lock, each way.	Ottawa to St. Johns, each way.	Murray Canal, each way.
<i>Class No. 5.</i>									
Bark.....	0 20	0 20	0 20	0 15	0 10	0 07	0 06	0 19 $\frac{1}{4}$	0 01 $\frac{1}{4}$
Barrels, empty, each.....	0 02	0 02	0 02	0 02	0 02	0 02	0 01	0 03 $\frac{1}{2}$	0 00 $\frac{1}{2}$
Boat knees, each.....	0 05	0 05	0 05	0 02	0 02	0 02	0 01	0 03 $\frac{1}{2}$	0 00 $\frac{1}{4}$
Floats, per 1,000 lineal feet.....	1 40	1 40	1 40	1 40	1 20	1 05	0 50	2 05	0 17 $\frac{1}{2}$
Firewood, per cord, in vessels.....	0 20	0 20	0 20	0 20	0 10	0 15	0 08	0 23	0 02 $\frac{1}{2}$
do do rafts.....	0 25	0 25	0 25	0 25	0 15	0 19	0 09	0 30 $\frac{1}{4}$	0 03 $\frac{1}{2}$
Hoops.....	0 25	0 25	0 25	0 20	0 15	0 15	0 10	0 30	0 02 $\frac{1}{2}$
Masts and spars, telegraph poles, per ton of 40 cubic feet, in vessels.....	0 15	0 15	0 15	0 05	0 05	0 08	0 07	0 13 $\frac{1}{4}$	0 00 $\frac{5}{8}$
Masts and spars, telegraph poles, per ton of 40 cubic feet, in rafts.....	0 20	0 20	0 20	0 10	0 10	0 15	0 10	0 22 $\frac{1}{2}$	0 01 $\frac{1}{4}$
Railway ties, in vessels, each.....	0 01	0 01	0 01	0 00 $\frac{1}{2}$	0 00 $\frac{1}{2}$	0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 01 $\frac{1}{2}$	0 0 $\frac{1}{16}$
do do rafts, each.....	0 02	0 02	0 02	0 01	0 01	0 02	0 01	0 02 $\frac{1}{4}$	0 00 $\frac{1}{2}$
Sawed stuff, boards, plank, scantling and sawed timber, per M. feet, board measure, in vessels.....	0 30	0 30	0 30	0 15	0 10	0 11 $\frac{1}{4}$	0 06 $\frac{3}{4}$	0 20	0 01 $\frac{7}{8}$
Sawed stuff, boards, plank, scantling and sawed timber, per M. feet, board measure, in rafts.....	0 60	0 60	0 60	0 30	0 20	0 19	0 09	0 36 $\frac{1}{2}$	0 03 $\frac{3}{4}$
Square timber, per M. cubic feet, in vessels.....	3 00	3 00	3 00	1 00	1 00	0 56	0 44	1 69	0 12 $\frac{1}{2}$
do do rafts.....	4 50	4 50	4 50	2 00	2 00	1 12	0 63	3 13	0 25
Wagon stuff, woodware and wood, partly manufactured, per ton of 40 cubic feet.....	0 40	0 40	0 40	0 40	0 25	0 30	0 20	0 55	0 05
Shingles, per M.....	0 06	0 06	0 06	0 06	0 04	0 04 $\frac{1}{2}$	0 02 $\frac{1}{2}$	0 08	0 00 $\frac{3}{4}$
Split posts and fence rails, per M., in vessels.....	0 40	0 40	0 40	0 40	0 20	0 23	0 12	0 42	0 05
do do do rafts.....	0 80	0 80	0 80	0 80	0 40	0 38	0 17	0 77	0 10
Saw logs, each, standard log.....	0 08	0 08	0 08	0 08	0 05	0 06	0 06	0 13	0 01
Staves and headings, barrel, per M.....	0 40	0 40	0 40	0 20	0 15	0 15	0 10	0 30	0 02 $\frac{1}{2}$
do do pipe, per M.....	1 50	1 50	1 50	1 00	1 00	0 75	0 50	1 75	0 12 $\frac{1}{2}$
do do W. India, per M.....	0 75	0 75	0 75	0 60	0 25	0 45	0 25	0 65	0 07 $\frac{1}{2}$
do do salt barrel, sawn or cut, per M.....	0 08	0 08	0 08	0 04	0 03	0 03	0 02	0 06	0 00 $\frac{1}{2}$
Traverses, per 100 pieces.....	0 50	0 50	0 50	0 50	0 40	0 38	0 15	0 67 $\frac{1}{2}$	0 06 $\frac{1}{4}$
Hop poles, per 1,000 pieces.....	2 00	2 00	2 00	2 00	1 50	1 50	0 65	2 65	0 25
<i>Special Class.</i>									
Gypsum, crude (per O.C., 28th Oct., 1892).....	0 15	0 05	.....	0 05	West ward	.....	.....	.....	.....
Coal.....	0 20	0 20	0 20	0 15	0 10	0 08	0 05	0 17 $\frac{3}{4}$	0 01 $\frac{7}{8}$
Stone, unwrought, corded, and not suitable for cutting, per cord.....	0 75	0 75	0 75	0 60	0 37 $\frac{1}{2}$	0 28	0 24	0 77 $\frac{1}{2}$	0 07 $\frac{1}{2}$
Kryolite, iron ore or chemical ore.....	0 05	0 05	0 05	0 05	0 05	0 05	0 05	0 05	0 05
Ice.....	0 05	0 05	0 05	0 05	0 05	0 05	0 05	0 11	0 05



# Department of Railways and Canals.

ON THE CANALS.—*Continued.*

## TRENT VALLEY CANALS.

1ST SECTION.	2ND SECTION.	3RD SECTION.	4TH SECTION.	THROUGH.	Peterborough to Hastings, each way.
Fenelon Falls to Bobcaygeon.	Bobcaygeon to Buckhorn.	Buckhorn to Burleigh.	Burleigh to Lakefield.	Fenelon Falls to Lakefield.	
Tolls Charge- able at Fenelon Falls.	Tolls Charge- able at Bobcaygeon.	Tolls Charge- able at Buckhorn.	Tolls Charge- able at Burleigh.	Tolls Charge- able at Fenelon Falls.	Tolls Charge- able at Peterborough and Hastings.
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
0 01	0 01	0 01	0 01	0 04	0 01
0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 01	0 00 $\frac{1}{4}$
0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 01	0 00 $\frac{1}{4}$
0 13	0 13	0 13	0 13	0 52	0 13
0 03	0 03	0 03	0 03	0 10	0 03
0 04	0 04	0 04	0 04	0 14	0 04
0 02	0 02	0 02	0 02	0 08	0 02
0 02	0 02	0 02	0 02	0 08	0 02
0 01	0 01	0 01	0 01	0 04	0 01
0 00 $\frac{1}{8}$	0 00 $\frac{1}{8}$	0 00 $\frac{1}{8}$	0 00 $\frac{1}{8}$	0 00 $\frac{1}{2}$	0 00 $\frac{1}{8}$
0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 00 $\frac{1}{4}$	0 01	0 00 $\frac{1}{4}$
0 03	0 03	0 03	0 03	0 10	0 03
0 04	0 04	0 04	0 04	0 14	0 04
0 07	0 07	0 07	0 07	0 28	0 07
0 14	0 14	0 14	0 14	0 56	0 14
0 04	0 04	0 04	0 04	0 16	0 04
0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 03	0 00 $\frac{3}{4}$
0 03	0 03	0 03	0 03	0 12	0 03
0 05	0 05	0 05	0 05	0 20	0 05
0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 03	0 00 $\frac{3}{4}$
0 02	0 02	0 02	0 02	0 08	0 02
0 10	0 10	0 10	0 10	0 40	0 10
0 05 $\frac{1}{2}$	0 05 $\frac{1}{2}$	0 05 $\frac{1}{2}$	0 05 $\frac{1}{2}$	0 22	0 05 $\frac{1}{2}$
0 00 $\frac{1}{2}$	0 00 $\frac{1}{2}$	0 00 $\frac{1}{2}$	0 00 $\frac{1}{2}$	0 02	0 00 $\frac{1}{2}$
0 05	0 05	0 05	0 05	0 20	0 05
0 20	0 20	0 20	0 20	0 80	0 20
Free.	Free.	Free.	Free.	Free.	Free.
0 01	0 01	0 01	0 01	0 04	0 01
0 03 $\frac{1}{2}$	0 03 $\frac{1}{2}$	0 03 $\frac{1}{2}$	0 03 $\frac{1}{2}$	0 14	0 03 $\frac{1}{2}$
0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 00 $\frac{3}{4}$	0 03	0 00 $\frac{3}{4}$
Free.	Free.	Free.	Free.	Free.	Free.

*St. Peter's Canal.*

Sec. 2. On each and every vessel passing through the said canal, two cents per ton on the vessel and one cent per ton on the freight, each way. O. C. June 23, 1883. Con. O. C. Oct. 26, 1889, sec. 109.

## SPECIAL REGULATIONS RELATING TO TOLLS ON SOME OF THE CANALS.

Sec. 3. Coal may pass up all canals, except the Welland Canal, free of toll. O. C. June 6, 1869. Con. O. C. Oct. 26, 1889, sec. 83.

Sec. 4. Logs, lumber or other produce may pass free of toll down the Chippawa Creek, between the Aqueduct and Port Robinson. O. C. May 18, 1863. Con. O. C. Oct. 26, 1889, sec. 84.

Sec. 5. (a.) In view of the dam constructed across the Ottawa River at Carillon whereby the passage of the rapids at that point through the river is rendered difficult and at times impracticable, it appears necessary, owing to the continued difficulty attending passage through the slide built in the dam, that the canal should be used by rafts, and until otherwise ordered, free passage be given to rafts through the Carillon Canal, subject to such regulations as the Department of Railways and Canals may find necessary in the interest of the traffic of the canal to adopt. O. C. July 6, 1888.

Sec. 5. (b.) "Save in cases for which special permission may be given the Grenville Canal is closed to the passage of rafts, or any portion of a raft of any kind whatever." O. C. June 27, 1890.

*Sault Ste. Marie Canal.*

Sec. 6. All vessels and freight shall be permitted to pass through the Sault Ste. Marie Canal free of toll upon such vessels and freight, until otherwise ordered.

Sec. 7. (a.) All up bound goods on which full tolls have been paid for passage through the whole of the St. Lawrence Canals, or for passage through the Lachine Canal, the Ottawa and Rideau Canals, shall be entitled to pass free through the Welland Canal, or any portion thereof, and tolls paid for passage through the Chambly Canal, on goods thereafter so becoming entitled to the above privilege, shall be refunded at Montreal. All down bound goods on which full tolls have been paid for passage through the Welland Canal shall be entitled to pass free through any or all of the mentioned Canals, or through any portion thereof. O. C. May 17, 1897.

(b.) All articles, goods or merchandise, not enumerated above, shall be charged to class No. 4. O. C. April 18, 1873. Con. O. C. Oct. 26, 1889, sec. 86.

Sec. 8. Goods shipped to any port west of the St. Lawrence Canals, tolls upon which have already been paid for passage through such canals, may be re-shipped from such ports and be passed through the Welland Canal free of tolls, in the same way as if they had been shipped through direct in the first instance; and goods going eastward, having paid Welland Canal tolls, may be transhipped at any port on Lake Ontario, and thereafter pass free through the St. Lawrence Canals, as if they had been shipped through direct in the first instance. O. C. June 23, 1883. Con. O. C. Oct. 26, 1889, sec. 87.

Sec. 9. Iron ore, kryolite or chemical ore, may pass through one section, or through all the canal sections aforesaid, for 5 cents per ton.

Sec. 10. No let-passes shall be issued to steam tugs or other small vessels for less than 25 cents, as a minimum charge; but such vessels, not carrying freight or passengers, can obtain, on payment of \$30, a season "Let-Pass," which will pass them up and down the canals as often as desired. O. C. April 18, 1873. Con. O. C. Oct. 26, 1889, sec. 86.

Sec. 11. All vessels owned or chartered by persons having contracts for the enlargement or repair of any of the canals, and employed by them in removing earth or carrying materials necessary for the prosecution of such works, shall be entitled to pass through such canals free of toll upon such vessel and cargo. O. C. April 22, 1884. Con. O. C. Oct. 26, 1889, sec. 35.

Sec. 12. Government dredges and scows shall be permitted to pass through the canals free of tolls, but that such dredges and scows shall not be so passed as to interfere with the passage of other vessels of any kind whatever. O. C. May 18, 1891.

## HARBOUR DUES.

Sec. 13. Vessels receiving or discharging freight at the premises of the Welland Railway, at Ports Colborne or Dalhousie, are to be free from harbour dues; but all other vessels discharging or receiving cargo at Port Dalhousie, Port Colborne or Port Maitland, shall pay on every ton of freight so received or discharged, two cents. O. C. April 18, 1873. Con. O. C. Oct. 26 1889.



# Department of Railways and Canals.

## WAY RATES.

Sec. 14. The following way rates are to be levied on vessels and property passing the several subdivisions of the canals :—

### *Welland Canal.*

	Rate.
1. From Port Maitland, Dunnville and Port Colborne to Port Robinson or Allanburg, not passing the lock, each way . . . . .	$\frac{1}{2}$
2. From Chippawa Cut, or any part thereof, to Dunnville, Port Maitland or Port Colborne. . . . .	$\frac{1}{2}$
3. From Dunnville to Port Colborne. . . . .	$\frac{1}{3}$
4. From Thorold to St. Catharines or Port Dalhousie . . . . .	$\frac{1}{2}$
5. From Maitland, Dunnville, Colborne or Port Robinson to Marshville and intermediate places . . . . .	$\frac{2}{3}$
6. From Marshville or intermediate places to Port Maitland, Dunnville, Port Colborne and Port Robinson. . . . .	$\frac{2}{3}$
7. From Port Robinson to Allanburg or Thorold. . . . .	$\frac{2}{3}$
8. From Port Robinson to St. Catharines or Port Dalhousie. . . . .	$\frac{1}{2}$
9. From St. Catharines to Port Dalhousie. . . . .	$\frac{1}{2}$
10. From Dunnville to Maitland. . . . .	$\frac{1}{4}$
11. From Port Robinson through the Lock and Chippawa Cut. . . . .	$\frac{1}{4}$
12. From Port Colborne to Port Maitland. . . . .	$\frac{1}{2}$
13. From Chippawa Cut through Lock to Port Robinson. . . . .	$\frac{1}{4}$
14. From Colborne, Dunnville, Maitland and Marshville to Thorold. . . . .	$\frac{2}{3}$
15. From Colborne, Dunnville, Maitland and Marshville to St. Catharines. . . . .	$\frac{2}{3}$
16. Through the Chippawa Cut only . . . . .	$\frac{1}{2}$
17. Through the Port Robinson Lock only . . . . .	$\frac{1}{2}$

### *St. Lawrence Canals.*

Sec. 15. The navigation is divided into four sections, viz., Cardinal, Cornwall, Beauharnois and Lachine. Tolls are to be levied on all vessels and property in proportion to the number of sections passed through.

### *Chambly Canal.*

	Rate.
Sec. 16. Vessels and property passing from Sorel to Chambly, to pay . . . . .	$\frac{1}{3}$
Vessels and property passing from Chambly to St. Johns, to pay . . . . .	$\frac{2}{3}$

### *Ottawa Canals.*

Sec. 17. The navigation is divided into three sections, viz., Grenville, Carillon and Ste. Anne's. Tolls are to be levied on all vessels and property in proportion to the number of sections passed through.

### *Rideau Canal.*

Sec. 18. The navigation of this canal is divided into three sections, viz., Ottawa, Smith's Falls and Kingston Mills. Vessels and freight passing one section are to be charged one-third ; two sections, two-thirds. O.C. April 18, 1873. Con. O.C. Oct. 26, 1889, secs. 77, 78, 79, 80 and 81.

Tay Canal to be part of the Rideau Canal and the following rates of tolls to be levied upon the said Tay Branch of the Rideau Canal system, viz. :—

- Perth to Smith's Falls, 1 section, or one-third of Rideau Canal rates, each way.
- Perth to Kingston, 2 sections, or two-thirds Rideau Canal rates, each way.
- Perth to Ottawa Basin, 2 sections, or two-thirds Rideau Canal rates, each way.
- Perth to River Ottawa, 3 sections, full Rideau Canal rates, each way. O.C. Sept. 27, 1890.

### *General.*

Sec. 19. (a.) Any fraction of a ton freight is to be charged one ton, and portions of sections are to be charged as a whole section on all the above canals.

(b.) The passing of saw logs or other lumber through any of the canals, or sections thereof, shall be at all times governed by the regulations for their management. O.C. April 18, 1873. Con. O.C. Oct. 26, 1889, sec. 82.



Sec. 20.—STANDARD FOR ESTIMATING WEIGHTS, FOR CANAL TOLLS.

	Tons.		Tons.
2,000 lbs. avoirdupois. ....	1	Stone, 12 cubic feet. ....	1
Per M. is per thousand feet. ....		Stone, 1 cord. ....	7½
Per milie is per thousand pieces. ....		Whisky, 4 barrels or 215 gallons. ....	1
Green fruit, 9 barrels are. ....	1	Empty barrels, 10. ....	1
Ashes, 3 barrels are. ....	1	Barrel hoops, 10 mille. ....	1
Bark, 4 cords. ....	1	Board and other sawed lumber, 600 feet	
Beef, 7 barrels. ....	1	board measure. ....	1
Biscuit and crackers, 9 barrels. ....	1	Boat knees, 4. ....	1
Bricks, common, 1,000. ....	2	Firewood, 1 cord. ....	3
Butter, 22 kegs or 7 barrels. ....	1	Hop poles, 60 or cubic feet. ....	1
Cattle, 3. ....	1	Shingles, 12 M. or bundles. ....	1
Cement and water lime, 7 barrels. ....	1	Split posts and fence rails, 1 mille. ....	1
Fire-bricks, 1,000. ....	3	Staves and headings, pipe, 1 mille. ....	8
Fish, 7 barrels. ....	1	do do W. India, 1 mille. ....	4
Flour, 9 barrels. ....	1	do do barrel, 1 mille. ....	2½
Gypsum and manganese, 6 barrels. ....	1	do do salt barrel, 1 mille. ....	0½
Horses, 2. ....	1	Saw-logs, standard, 1. ....	0½
Lard and tallow, 7 barrels or 22 kegs. ....	1	Square timber, 50 cubic feet. ....	1
Liquors and spirits, 215 gallons. ....	1	Telegraph poles, 10, or 40 cubic feet. ....	1
Liquors, all others, 215 gallons. ....	1	Masts and spars, 40 cubic feet. ....	1
Nuts, 9 barrels. ....	1	Railroad ties, 16, or 50 cubic feet. ....	1
Oysters, 6 barrels. ....	1	All other woodenware, or partly manufac-	
Pork, 7 barrels. ....	1	tured wood, 40 cubic feet as per tariff. ....	1
Salt, 7 barrels. ....	1	Traverses, 40 cubic feet, or 5 pieces. ....	1
Seeds, 9 barrels. ....	1	Floats, 50 lineal feet. ....	1
Sheep, 20. ....	1		

NOTE.—By the Weights and Measures Act, chapter 104 of the Revised Statutes of Canada, section 14, all the following named articles are to be estimated by the cental of 100 lbs.  
The weight equivalent to a bushel being as follows:—Wheat, 60 lbs. ; Indian corn, 56 lbs. ; rye, 56 lbs. ; pease, 60 lbs. ; barley, 48 lbs. ; oats, 34 lbs. ; beans, 60 lbs. ; clover seed, 60 lbs. ; timothy seed, 48 lbs. ; buckwheat, 48 lbs. ; flax seed, 50 lbs. ; blue grass seed, 14 lbs. ; hemp seed, 44 lbs. ; malt, 36 lbs. ; castor beans, 40 lbs. ; potatoes, turnips, carrots, parsnips, beets and onions, 60 lbs. ; bituminous coal, 70 lbs.

TOLLS AT SHEDS AT LACHINE CANAL BASIN.

Sec. 21. The following tolls shall be levied upon property stored at the sheds at the Lachine Canal Basin :—

		Cents.
Wheat and other grain, per week, per bushel. ....		1
Meal do per barrel. ....		4
Pork, beef, butter and lard do do. ....		5
Muscovado sugar do per hhd., 10 cents ; per brl. ....		5
Liquors { do per pipe, 15 cents ; per pun. ....		12
do { do per hhd., 10 cents ; per qr. cask. ....		7
Iron (bars) do per ton. ....		24
Iron, pig do do. ....		12
Salt, except at the St. Gabriel sheds do per 100 minots. ....		36
Salt at the St. Gabriel sheds, Montreal, after the first 48 hours do per bag. ....		½
Bales, crates, cases, &c. do per ton weight or measurement. ....		24
Coals do per chaldron. ....		12

Sec. 22. (a.) No charge shall be made for property stored in the sheds of the Lachine Canal Basin for the first forty-eight hours, after which period, except in the case of flour, the foregoing rate of storage for the use of the sheds are to be raised, levied and collected.  
(b.) Articles unenumerated are to be charged according to the above rates as nearly as the same can be computed.  
(c.) All property stored in the sheds remaining after the first forty-eight hours will be liable to one week's storage, although it should only have been stored for a portion of the same, and so on for each succeeding week

## Department of Railways and Canals.

(d.) The labour of receiving property into the sheds and delivering the same shall be at the expense of and be furnished by the owners of the property or their agents.

(e.) All property stored in these sheds shall be at the risk of the proprietor from damage by fire or otherwise.

(f.) All dues for storage shall be paid before the removal of the property. O. C. August 21, 1846, October, 28, 1846. Con. O.C. Oct. 26, 1889, secs. 90 and 91.

### *Flour.*

Sec. 23. (a.) Flour shall be allowed to remain in the sheds for two whole days free of charge.

(b.) If kept there beyond two days or 48 hours, such flour shall be liable to a charge of one cent per day per barrel for the first four days after the expiration of the 48 hours of the exemption.

(c.) Should the flour be kept in the sheds beyond four days at one cent per day per barrel, it shall be liable to pay two cents per day per barrel for every day subsequent to the expiration of such four days.

(d.) Any part of a day shall be considered as one day. O. C. May 31, 1856. Con. O.C. Oct. 26, 1889, sec. 92.

### WHARFAGE DUES ON COAL FOR LOCAL CONSUMPTION IN MONTREAL.

Sec. 24. Coal for local consumption in Montreal, landed on canal property between Montreal Harbour and Côte St. Paul, from vessels other than sea-going, and entering the Lachine Canal from Montreal Harbour, shall be charged wharfage dues at the rate of five cents a ton.

Coal screenings shall be charged 3 cents a ton. Con. O.C. Oct. 26, 1889, sec. 93. O.C. May, 18, 1892.

### CHARGES FOR WHARFAGE ON FIREWOOD ON WHARFS AND BANKS OF LACHINE CANAL.

Sec. 25. The following rates of tolls shall be collected as herein mentioned, that is to say :—

(a.) Firewood landed on wharfs or banks of the Lachine Canal, or in boats, barges or other craft occupying any of the basins between Wellington Street Bridge and Lock No. 3, four cents per cord, and for every day the wood is allowed to remain in either the canal or basin, or on the wharfs or banks after the first five days, an additional charge of four cents per cord. O. C. August 7, 1860. Con. O.C. Oct. 26, 1889, sec. 94.

(b.) The clause next preceding shall not only apply to the rates of toll to be collected on firewood on wharfs at Lachine and the Lachine Canal and basin, but are also extended and made applicable to the banks and grounds at Côte St. Paul and at Lachine. O. C. Jan. 27, 1862. Con. O.C. 1889, sec. 94.

### CANAL BASINS IN MONTREAL PART OF MONTREAL HARBOUR.

Sec. 26. Whereas under existing regulations for the collection of canal tolls, eastern bound vessels having paid the charges one way in full through the Welland Canal are chargeable one Section Canal Toll if re-entering the Lachine Canal ;

And whereas vessels loaded with grain destined for the Montreal Harbour frequently unload only part of their cargoes on board sea-going vessels in the harbour, and re-enter the Lachine Canal for the purpose of unloading the balance of their cargoes either in elevators or mills located along the canal basins ;

It is ordered that the Lachine Canal basins, within the Montreal city limits, be considered as part of the Montreal Harbour, in so far only as regards the collection of tolls on the class of vessels above referred to, which re-enter that portion of the canal for the purpose of unloading the balance of their cargoes, but that the same shall not apply any further, as in the event of vessels returning to the harbour to take cargo, in which case the usual toll shall be charged against them on passing out of the canal a second time into the harbour. O. C. Aug. 8, 1878. Con. O.C. Oct. 26, 1889, sec. 95.

### PHOSPHATES.

Sec. 27. Whereas vessels laden with grain for delivery in Montreal Harbour frequently carry also deck loads of phosphates, and being compelled to proceed at once to the harbour for the discharge of the grain, they pay tolls through to that point, subsequently re-entering the Lachine Canal for the storage of the phosphates, and in accordance with the existing regulations, paying canal dues a second time for such re-entry ;

It is ordered that the Lachine Canal basins, within the Montreal city limits, be considered as part of the Montreal Harbour, for the purpose of the unloading of phosphates carried by vessels in addition to their grain cargoes as described in this section ; it being, however, provided that in the event of their returning to the harbour to take cargo, the usual tolls shall be charged against such vessels on their passing out of the canal a second time. O. C. July 12, 1881. Con. O.C. Oct. 26, 1889, sec. 96.



WHARFAGE DUES IN ALL BASINS OF THE LACHINE CANAL ON SEA-GOING VESSELS.

Sec. 28. The Montreal Harbour Commissioners shall be allowed to retain the right of levying dues in respect of the old lower basin of the Lachine Canal, but the Government shall retain full control of the new works and basin of said canal and of the revenue that may be derived from their use.

All property delivered or received by sea-going vessels in the Lachine Canal basins at Montreal (except the old lower basin) shall be charged wharfage dues as follows :—

All goods, wares and merchandise not elsewhere specified.....	25 cents per ton.
Hay, straw, pig and scrap iron, pot and pearl ashes.....	20 do
Apples, crates and their contents, flour and meal, fish, meats, pitch, pota- toes, tar, horses, neat cattle, sheep and swine.....	15 do
Ballast, clay, fire-bricks, gypsum, lime, marble, phosphate, sand, salt.....	10 do
Coal and coke, grain and seeds of all kinds.....	7½ do
Special—Bricks, 10 cents per 1,000 ; cordwood, 5 cents per cord ; lumber, 10 cents per 1,000 feet, board measure.	
Bullion specie.....	Free.
Coal screenings.....	3 do

Each entry shall pay not less than 5 cents.

All property landed on the canal wharfs for re-shipment, or transhipped in canal waters, shall pay one wharfage only.

Lumber upon which tolls have been paid for passage down the Lachine Canal, and which is re-shipped from the wharfs or vessels into sea-going vessels, shall pay wharfage dues equal to one section of canal tolls, viz., 3¼ cents per 1,000 feet board measure. O.C. Jan. 26, 1883. Con. O.C. Oct. 26, 1889, secs. 98, 99, 100 and 101. O.C. May 18, 1892.

Sec. 29.—Standard for Estimating Weights.

Ashes, pot or pearl.....	3 brls. to 1 ton.
Apples, flour, meal, potatoes.....	9 do 1 do
Fish, meat, pitch, tar.....	7 do 1 do
Horses.....	2 to 1 ton.
Neat cattle.....	3 to 1 do
Sheep.....	15 to 1 do
Swine.....	10 to 1 do

O. C. April 1, 1881. Con. O.C. Oct. 26, 1889, sec. 102.

TOLLS ON FLOATED TIMBER, ETC., ENTERING THE BASIN AT LACHINE.

Sec. 30. The following rates of tolls shall be collected on floated timber, lumber and firewood entering the basin at Lachine and Lachine Canal :—

Kinds of Timber.	For receiving Tim- ber, &c., to include use of Basin and Wharf for one Month.	For each succeeding month during the Season of Naviga- tion.	For Wintering in Basin or on Wharf.
	Cents.	Cents.	Cents.
Timber, square or round, of all kinds, above 12 x 12, per M cubic feet.....	25	20	35
Timber, round or flattened, of all kinds, under 12 x 12, per M lineal feet.....	20	15	30
Planks and boards to include all kinds of saved lumber in rafts, per M feet, board measure.....	3	2	3
Saw logs, 12 feet long, if longer in same proportion per log.....	1	½	2
Floats, per 100.....	10	5	10
Traverses, per 100.....	10	5	10
Fence posts and rails, per M.....	10	5	10
Staves, barrel, per M.....	8	4	8
do pipe do.....	8	4	8
do West India, per M.....	8	4	8
Firewood on bank of canal between Lock No. 3 and Lock No. 5, and also on wharfs in canal basin at Lachine.....	3	3	3



# Department of Railways and Canals.

## Note.

Sec. 31. (a.) No allowance shall be made for fractional parts of a month or winter season.

(b.) The firewood shall be corded across the bank while being delivered from the boat in such manner and at such points as the superintending engineer may direct.

(c.) The rates on timber to take effect upon the completion of the booms in Lachine Canal. O. C. June 8, 1860. Con. O.C. Oct. 26, 1889, secs. 103 and 104.

### CHARGES ON VESSELS WINTERING IN LACHINE CANAL.

Sec. 32. The following rates per ton shall be charged for wintering vessels in the Lachine Canal, viz. :—For each boat, barge, scow or other vessels of ten tons measurement or under, seventy cents per vessel for the entire winter, and every ten tons above the first ten, an additional rate of eight cents. O.C. Aug. 22, 1879. Con. O.C. Oct. 26, 1889, sec. 97.

### CHARGES FOR WINTERING VESSELS IN RIDEAU CANAL.

Sec. 33. The winterage dues for vessels wintering in the canal basin, at Ottawa, or other points along the line of the Rideau Canal, shall be as follows :—

In canal basin, Ottawa, steamers per season.....	\$ 8 00
do do barges do .....	4 00
Inside locks do steamers do .....	50 00
do other stations do do .....	15 00

If the Minister of Railways and Canals deems it advisable, he is authorized to take security from parties wintering their vessels in locks against damage to Government property by fire. O. C. March 19, 1887. Con. O.C. Oct. 26, 1889, sec. 105.

### CHARGES FOR WINTERING VESSELS IN THE OTTAWA RIVER CANALS AND LOCKS.

Sec. 34. The charge for vessels wintering on the Ottawa River canals and locks, and the same is hereby prescribed accordingly, namely :

In Carillon Canal, steamers per season.....	\$ 8 00
barges do .....	4 00
Grenville Canal, steamers, for season.....	8 00
barges do .....	4 00
Inside Locks, Ste. Anne, Carillon and Grenville Canals, steamers, per season.....	25 00
Inside locks, Culbute Canal, per season.....	15 00

Such security against damage by fire to be taken by way of bond as, in the opinion of the Minister of Railways and Canals, may seem desirable. O.C. Oct. 14, 1892.

Sec. 35. No charges to be made for vessels wintering outside the locks of any government canal. O.C. Dec. 12, 1889.

### CHARGES FOR REPAIRING VESSELS ON THE BANKS OF CANALS.

Sec. 36. (a.) Persons using the banks of the Lachine Canal as a site for the repair of their vessels shall be subject to a charge of four dollars, payable in advance, for each vessel ; the period during which such site may be occupied under any one payment being limited to six months, and permission for repairing being first obtained from the proper officer, in conformity with the existing canal regulations.

(b.) In the event of failure to remove vessels so occupying the banks at the expiration of the period named, no fresh permits having been obtained, such vessels may be sold under the 16th section of the canal regulations. O. C. March 5, 1880. Con. O.C. Oct. 26, 1889, sec. 106.

Sec. 37. Rules with respect to the repairing of vessels on the banks of the Lachine Canal, the Beauharnois and the Chambly :—

(a.) Repairs shall only be executed at such points as may be indicated and approved by the superintending engineer.

(b.) For each vessel hauled up or beached for repairs, a charge of one dollar, over and above all other charges, shall be made, carrying the privilege of remaining one month, a further sum of one dollar being charged for each additional month, or fraction of a month, the vessel may remain,

(c.) In cases, however, where a vessel hauled up for repairs upon the canal bank remains there throughout the winter, a charge of four dollars only shall be made (in addition to the ordinary winterage dues), the period covered being from the 1st of November to the 1st of June, inclusive.

(d.) Any vessel remaining on the canal bank after having wintered thereon shall be charged at the rate of one dollar a month or fraction of a month of her subsequent stay.

(e.) Any vessel remaining more than one year on the bank of the canal shall for such time as she may remain in excess of that period pay at the rate of two dollars a month or fraction of a month throughout the whole year.

(f.) All charges shall be payable at the collector's office in advance on the first day of each month.

(g.) These rules shall be understood as applying to all cases where the canal bank is used in any manner for the repairs of vessels, whether such vessels are actually hauled up or not. O. C. August 6, 1881. Con. O.C. Oct. 26, 1889, sec. 107.

DRY DOCK CHARGES.

*Trent Valley Canal.*

Sec. 38. The following tolls and dues shall be charged for the use of the dry dock at Bobcaygeon, and of any of the locks on the Trent Valley Canal, during the winter or other shorter period :—

For Vessels	Wintering.	Per day.	Per week.
Over 15 tons.....	\$30 00	\$4 00	\$12 00
15 tons and under.....	20 00	3 00	10 00

(O.C. Oct. 31, 1890.)

*Rideau Canal.*

Sec. 39. The following tariff of tolls and regulations shall be, and the same are hereby established for the use of the dry dock on the Rideau Canal at Ottawa :—

(1) Steamers entering dock.....	\$ 8 00
Each day or portion of a day after day of entrance.....	2 50
(2) Barges entering dock.....	5 00
Each day or portion of a day after day of entrance.....	2 50
(3) Steam yachts or launches.....	5 00
Each day or portion of a day after day of entrance.....	2 50
(4) Boats wintering in the dry dock from the close to the opening of navigation.	50 00
For every day such boat remains in the dock after the opening of navigation.	8 00

(5) No vessel of any class shall be in the dock over six days after notice is given in writing by the lockmaster that the dock is required for another vessel unless a satisfactory agreement between all parties interested is arrived at.

(6) All entrance and discharge of vessels are covered by entrance fee.

(7) All drying off of vessels of all classes in the locks at Ottawa or Hartwell's during the season of navigation is prohibited unless for special reasons.

The owners of vessels of all classes to render the required assistance to open and close the gate under the supervision of the superintending engineer.

Vessel owners to supply all blocks, &c., to shove their boats up to make the necessary repairs, and all refuse to be properly cleared out to the entire satisfaction of the lockmaster before leaving the dock.

(O.C. Dec. 28, 1893.)

Sec. 40. The use of horses for towage purposes between the lower entrance of the Cornwall Canal and lock No. 20, be prohibited during the works of enlargement of that portion of the Cornwall Canal.

(O.C. Aug. 20, 1890.)

Sec. 41. As the prohibition of the use of horses for towing purposes, between the lower entrance of the Cornwall Canal and Lock No. 20 during the progress, of the works of canal enlargement, has entailed the use of tugs and consequently expenses to the parties concerned, that all tugs, used solely for the purposes of towing on the section in question, be permitted to pass free of toll, up and down the canal between the lower entrance of the canal and lock No. 20, until the completion of the enlargement of the works on that section. (O.C. Sept. 27, 1890.)

SPECIAL RATES FOR SEASON OF 1897 ONLY.

Sec. 42. For season of 1897 the canal tolls for the passage of the following food products :—Wheat, indian corn, barley, pease, rye, oats, flax seed and buckwheat, for passage eastward through the Welland Canal be ten cents per ton; and for passage eastward through the St. Lawrence Canals only ten cents per ton; payment of the said tolls of ten cents per ton for passage through the Welland Canal to entitle these products to free passage through the St. Lawrence Canals. O.C. April 17th, 1897.

Sec. 43. That for the current season of navigation of 1897, only in the case of steamers specially chartered for the conveyance of excursion parties going and returning the same day, a reduction amounting to one-half of the usual passenger tolls, be allowed for passage through the government canals. O.C. May 5th, 1897.

## Department of Railways and Canals.

Sec. 44. Whereas the Canal Tolls payable for passage through the Welland and St. Lawrence Canals of barrel staves and headings, are 40 cents per 1,000 in the case of ordinary materials, such as those for sugar and flour barrels; while in the case of staves and headings for salt barrels the charge is 8 cents per 1,000 only.

And whereas application is made to have this distinction removed on the ground that sugar and flour cooperage is of the same weight as salt cooperage.

His Excellency in virtue of the provisions of chapter 38 of the Revised Statutes of Canada, intituled "An Act respecting the Department of Railways and Canals," and by and with the advice of the Queen's Privy Council for Canada, is pleased to order that Class 5 of the existing Tariff of tolls for passage through the Canals of the Dominion, established by the Order in Council of the 25th March, 1895, shall be and the same is hereby amended to the effect, and to that effect only, of removing the distinction between ordinary and salt barrel staves and headings, and making the tolls payable for these articles the same namely, those at present charged on salt barrel staves and headings, on all the Canals of the Dominion. (O.C. May 28th 1897.)

### SPECIAL RATES ON SAND AND STONE.

Sec. 45. On the recommendation of the Acting Minister of Railways and Canals, the rate of tolls on sand and stone used in the construction of the bridge being built at Cornwall by the Ottawa and New York Railway was reduced from 15 and 20 cents to  $7\frac{1}{2}$  and 10 cents respectively. O.C. August 27th, 1898.





Department of Railways and Canals.

PART VI

RAILWAY STATISTICS





RAILWAY STATISTICS

OF THE

DOMINION OF CANADA

For the year ended 30th June, 1898

Compiled by Mr. Thomas Ridout, C.E., from sworn Returns furnished by the several  
Railway Companies.

COLLINGWOOD SCHREIBER,

*Deputy Minister and Chief Engineer of Railways and Canals.*

TABLE showing the growth of the Railways from year to year, since the opening of the  
first line in 1836.

Year.	Miles in Operation.	Year.	Miles in Operation.
1835.....	0	1867.....	2,278
1836.....	16	1868.....	2,278
1837.....	16	1869.....	2,524
1838.....	16	1870.....	2,617
1839.....	16	1871.....	2,695
1840.....	16	1872.....	2,899
1841.....	16	1873.....	3,613
1842.....	16	1874.....	3,832
1843.....	16	1875.....	4,331
1844.....	16	1876.....	4,804
1845.....	16	1877.....	5,218
1846.....	16	1878.....	5,782
1847.....	54	1879.....	6,126
1848.....	54	1880.....	6,858
1849.....	54	1881.....	7,194
1850.....	66	1882.....	7,331
1851.....	159	1883.....	8,697
1852.....	205	1884.....	9,577
1853.....	506	1885.....	10,273
1854.....	764	1886.....	10,773
1855.....	877	1887.....	11,793
1856.....	1,414	1888.....	12,184
1857.....	1,444	1889.....	12,585
1858.....	1,863	1890.....	13,151
1859.....	1,994	1891.....	13,838
1860.....	2,065	1892.....	14,564
1861.....	2,146	1893.....	15,005
1862.....	2,189	1894.....	15,627
1863.....	2,189	1895.....	15,977
1864.....	2,189	1896.....	16,270
1865.....	2,240	1897.....	16,550
1866.....	2,278	1898.....	16,870

THE SUMMARY of Tables for the Years ended 30th June, 1897 and 30th June, 1898.

	Comparative Statement.	
	30th June, 1897.	30th June, 1898.
Miles of railway completed (track laid).....	16,687	16,870
" sidings.....	2,218	2,248
" iron rails in main line.....	210	248
" steel ".....	16,477	16,622
" " " double track.....	550	553
Capital paid (including the four following items).....	\$ 921,858,232	\$ 941,297,037
Government (Dominion and Provincial) bonuses paid.....	\$ 159,241,584	\$ 161,136,218
" " " loans paid.....	\$ 21,569,149	\$ 21,569,149
" (Provincial only) subscription to shares paid.....	\$ 300,000	\$ 300,000
Municipal aid paid.....	\$ 15,610,868	\$ 15,660,668
Miles in operation.....	16,550	16,718
Gross earnings.....	\$ 52,353,276	\$ 59,715,105
Working expenses.....	\$ 35,168,665	\$ 39,137,549
Net earnings.....	\$ 17,184,611	\$ 20,577,556
Passengers carried.....	16,171,338	18,444,049
Freight carried (tons).....	25,300,331	28,785,903
Train mileage.....	45,780,851	50,688,283
Passengers killed.....	7	5
Number of elevators.....	93	108
" guarded level crossings--public roads.....	167	171
" unguarded " ".....	11,239	11,646
" overhead bridges.....	421	432
" level crossings of other railways.....	230	243
" junctions with other railways.....	327	349
" " branch lines.....	219	227
" engines owned.....	2,006	2,026
" " hired.....	90	86
" sleeper and parlour cars owned.....	189	188
" " hired.....	37	38
" first class cars owned.....	1,047	1,176
" " hired.....	38	38
" second class and immigrant cars owned.....	684	623
" " " hired.....	4	5
" baggage, mail and express cars owned.....	663	647
" " " hired.....	11	21
" refrigerator cars owned.....	300	398
" " hired.....		122
" cattle and box freight cars owned.....	33,585	35,459
" " " hired.....	2,582	3,361
" platform cars owned.....	15,149	15,864
" " hired.....	203	442
" coal and dump cars owned.....	4,831	5,181
" " hired.....		
" conductor vans owned.....	942	1,017
" " hired.....		7
" tool cars owned.....	112	202
" " hired.....		3
" snow ploughs owned.....	100	292
" " hired.....		2
" flangers owned.....	145	154
" " hired.....		1

Department of Railways and Canals.

NOMINAL Capital Paid, up to 30th June, 1898.

	Miles constructed.	Amount.	Per Mile.	Remarks.
		\$ cts.	\$ cts.	
Ordinary share capital.....	16,870	266,669,856 56	15,807 34	
Preference ".....	16,870	111,481,932 98	6,608 29	
Bonded debt.....	16,870	354,946,865 57	21,040 12	
Aid from Dominion Government.....	16,870	151,509,811 87	8,981 02	
" Ontario ".....	6,733	7,200,003 59	1,069 36	} Equal to an aver- age of \$928.31 per mile on the total mileage.
" Quebec ".....	3,305	15,550,290 88	4,705 08	
" New Brunswick Government.....	1,420	4,429,090 71	3,119 07	
" Nova Scotia ".....	929	1,653,108 53	1,779 45	
" Prince Edward Island Government.....	210	.....	.....	
" Manitoba Government.....	1,592	2,625,561 77	1,649 22	
" British Columbia Government.....	911	37,500 00	41 16	
" North-west Territories Government.....	1,770	.....	.....	
" Municipalities in Ontario.....	6,733	11,940,164 37	1,773 38	
" " Quebec.....	3,305	2,569,218 62	777 37	
" " New Brunswick.....	1,420	336,500 00	236 98	
" " Nova Scotia.....	929	181,685 00	195 57	
" " Prince Edward Island.....	210	.....	.....	
" " Manitoba.....	1,592	595,600 00	311 30	
" " British Columbia.....	911	37,500 00	41 16	
" " North-west Territories.....	1,770	.....	.....	
Capital from other sources.....	16,870	9,532,346 37	565 04	
Total paid Capital.....	16,870	941,297,036 82	55,797 09	

GOVERNMENT and Municipal Loans, Bonuses, &c., promised to Railways completed and under construction up to 30th June, 1898 :—

Dominion Government.....	\$ 160,623,556 59
Ontario ".....	7,437,116 63
Quebec ".....	16,700,918 42
New Brunswick Government.....	4,430,590 71
Nova Scotia ".....	2,350,116 53
Manitoba ".....	2,626,611 77
British Columbia ".....	37,500 00
Municipalities in Ontario.....	12,565,656 37
" Quebec.....	4,353,074 00
" New Brunswick.....	356,500 00
" Nova Scotia.....	291,685 00
" Manitoba.....	595,600 00
" British Columbia.....	37,500 00
" North-west Territories.....	.....
Total.....	\$ 212,406,426 02



FATAL ACCIDENTS for Year ended 30th June, 1898.

	Passengers killed.	Employees killed.	Others killed.	Total killed.
Falling from cars or engines.....	3	20	17	40
Getting on or off trains in motion.....		5	12	17
At work making up trains.....		5		5
Putting heads or arms out of windows.....				
Coupling cars.....		11		11
Collisions and derailments.....		23	14	37
Striking bridges.....				
Walking or lying on track.....		15	88	103
Explosions.....				
Other causes.....	2	19	36	57
Total killed.....	5	98	167	270

# Department of Railways and Canals.

LAND GRANTS made by Governments to Railways completed and under construction up to 30th June, 1898.

Act Authorizing Subsidy.	Name of Railway.	Government.	Miles Subsidized.	Acres Granted per Mile.	Total Acres Granted.	Acres Sold by Railway Companies.	Amount Realized.
48-49 Vic. c. 60..	Alberta Railway and Coal Co. (Main Line)—						\$ cts.
50-51 Vic. c. 22..	Dunmore to Lethbridge.....	Dominion.....	109.50	6,400	700,800	834,048	1,101,733 00
52 Vic. c. 4.....	Alberta Railway and Coal Co.—	"					*
52 Vic. c. 4.....	From Lethbridge to International Boundary.	"	64.62	6,400	413,568		
52 Vic. c. 3.....	Calgary and Edmonton Railway.....	"	340.00	6,400	2,176,000	1,481,046	
53 Vic. c. 4.....	Canadian Pacific Railway (Main Line).....	"			18,206,986		
44 Vic. c. 1.....	Can. Pac. Ry., Deloraine and Napinka Branch.....	"	18.01	6,400	115,264	+6,793,014	10,189,521 00
53 Vic. c. 4.....	" (Glenboro' and Souris Branch.....	"	45.24	6,400	289,536	3,829,463.24	12,531,403 48
53 Vic. c. 4.....	"	"				Also town sites	
53 Vic. c. 4.....	" Kenney and Estevan Branch.....	"	156.86	6,400	1,003,904	(other than land grants)	
54 Vic. c. 10.....	" Pipestone Branch.....	"	31.30	6,400	200,320	net proceeds.	1,431,167 87
57-58 Vic. c. 6.....	Great North-west Central.....	"	50.00	6,400	320,000	Nil.	
49 Vic. c. 11.....	Lake Manitoba Railway and Canal Co.....	"	125.00	6,400	800,000	Nil.	
58 Vic. c. 4.....	Manitoba and North-western Ry. (Main Line).....	"	430.00	6,400			
48-49 Vic. c. 60.....	" Branch from Binscarth.....	"	26.00	6,400	2,918,400	644,927	735,457 20
49 Vic. c. 11.....	Saskatchewan and Western Railway.....	"	15.47	6,400	99,008	Nil.	
57-58 Vic. c. 6.....	Manitoba and South-eastern Railway Co.....	"	98.00	6,400	627,200		
53 Vic. c. 4.....	" South-western Colonization Co.....	"	218.25	6,400	1,396,800	298,030.41	1,354,136 05
54-55 Vic. c. 10.....	Qu'Appelle, Long Lake and Saskatchewan Railway and Steamboat Co.....	"	253.96	6,400	1,625,344	128,000	121,600 00
48-49 Vic. c. 10.....	Red Deer Valley Railway and Coal Co.....	"	55.00	6,400	352,000	998,230	*
50-51 Vic. c. 23..						No return.	
52 Vic. c. 4.....							
54 Vic. c. 9.....							
47 Vic. c. 25, sec. 7	Winnipeg Great Northern Railway.....	"	900.00	Div. A. 6,400 " B. 12,800 " C. 6,400	8,480,000	No return of land sales.	
	Yarmouth and Annapolis.....	Nova Scotia.....			150,000		
	Columbia and Kootenay.....	British Columbia.....			200,000	Town sites.....	124,163 10
	Esquimalt and Nanaimo.....	"			1,900,000	1,888	3,584 59
	Nelson and Fort Sheppard.....	"			614,000	261,313.64	819,660 90
						Not returned.	
	Kaslo and Slocan.....	"			198,240	9 Lots in town sites.	2,664 00

† Sold to the Dominion Government at \$1.50 per acre. \* Again after efforts to obtain a statement of the amounts realized from the sale of these lands the companies have failed to give the information- the return therefore in this respect is incomplete.

TABLE showing Location of the Railways of the Dominion of Canada, 30th June, 1898.

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Alberta Railway and Coal Co....	From Lethbridge in District of Alberta, N.W.T., to Coutts, on International boundary, 3' gauge..... The portion from Dunmore to Lethbridge 107 miles was changed to 4'-8½" gauge and sold to Can. Pac. Ry., 29th Nov., 1893.		64·62
Albert Southern.....	Harvey Branch Junction to Alma, N.B..... Harvey Branch Albert to Harvey Bank, N.B.....	16·00 3·00	19·00
Baie des Chaleurs in Atlantic and Lake Superior System....	Metapedia Station on C.P.R. to West-Paspediac.....		98·00
Bay of Quinté Railway and Navigation Co.....	Deseronto, on Bay of Quinté, Lake Ontario to Deseronto Junction, Grand Trunk Railway.....		4·00
Berlin and Waterloo (electric)....	Berlin to Waterloo.....		3·00
Buctouche and Moncton.....	Moncton, on Intercolonial Railway, to Buctouche, N.B.....		32·00
Brockville, Westport and Sault Ste. Marie.....	Brockville to Westport, Ont.....		45·00
Calgary and Edmonton.....	Calgary to Edmonton..... " McLeod, District of Alberta.....	190·97 104·10	295·07
Canada Atlantic.....	City of Ottawa to Junction with Grand Trunk at Lacolle and U. S. boundary. Crosses the St. Lawrence at Coteau by bridge. Connects with Grand Trunk Railway at Coteau and Lacolle.....		138·00
Central Counties.....	From Glen Robertson, on Canada Atlantic, to Hawkesbury, Ont.....	21·00	
Leased to Canada Atlantic.....	South Indian, on Canada Atlantic, to Rockland.....	17·00	38·00
Canada Southern.....	Main Line—Windsor, Ont., to Suspension Bridge... Amherstburg Branch—Essex Centre to Amherstburg... St. Clair Branch—St. Clair Junction to Courtright... Fort Erie Branch—Fort Erie to Welland Junction... Erie and Niagara Branch—Old Fort Erie to Niagara... Oil Springs Branch—Oil Springs to Oil City.....	226·18 16·83 62·63 17·50 30·60 5·50	
Leased.....	Sarnia, Chatham and Erie—Oil City to Petrolia.....	7·00	
".....	Leamington and St. Clair—Comber to Leamington..	15·95	382·19
Canada Eastern.....	Late Northern and Western of New Brunswick— Gibson, opposite City of Fredericton to Chatham Junction, I.C.R..... Chatham Junction to Chatham and Logieville via Nelson..... Blackville to Indiantown.....	107·00 20·00 9·00	
Canadian Pacific: Owned.....	Main Line—Callander to Vancouver.....	2,560·90	136·00
Canada Central).	" Ottawa to Callandar.....	223·60	
(Que., Mont., Ottawa & Occid.)	" Montreal to Ottawa.....	120·30	
( " North Shore)	" Quebec to St. Martin's Junction.....	159·80	
	Branches—Piles Junction to Grand Piles.....	26·90	
	" Berthier Junction to Berthier.....	2·00	
	" Joliette Junction to St. Félix.....	16·80	
	" Ste. Thérèse Junction to St. Jérôme.....	13·60	
	" " to St. Eustache.....	6·00	
Montreal & Western....	" St. Jérôme to Labelle.....	70·00	
	Branches—St. Lin Junction to St. Lin.....	15·00	
	" Buckingham Stn. to Buckingham Village.	4·20	
Brockville & Ottawa Railway....	" Carleton Jct. to Brockville.....	45·00	
	" Sudbury to Sault Ste. Marie.....	180·60	
	" Sudbury to Copper Mines.....	5·60	
	" Winnipeg Junction to Emerson.....	64·50	
	" Winnipeg Junction to Manitou.....	101·10	
	" Rosenfeldt to Gretna.....	13·70	
	" Winnipeg to West Selkirk.....	22·50	
	" Air Line Junction to Stonewall.....	17·90	



# Department of Railways and Canals

TABLE showing Location of Railways, &c.—*Continued.*

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Canadian Pacific— <i>Continued.</i>	Souris Branch. { Kenmay to Estevan.....	156·20	
	{ Glenboro' to Souris. ....	45·70	
	{ Deloraine to Napinka.....	18·60	
	Branches—Menteith Junction to Reston. ....	31·50	
	" North Portal to Pasqua. ....	160·30	
Lake Temiscamingue Colonization	" New Westminster Junction to New Westminster.....	8 20	
	" Mattawa to Kippewa.....	45·80	
	" Mission Junction to Mission..	10·10	
	" Revelstoke to Arrow Head.....	27·80	
	" Vancouver to Coal Harbour.....	1·20	
Alberta Ry .....	" Three Forks to Sandon.....	4·20	
	" Dunmore to Lethbridge.....	107·00	
	Total mileage owned.....	4,286·44	
Leased Lines .....	Atlantic and North-west (in Canada)—		
	South end Lachine Bridge to Maine boundary, Que.....	182·50	
	Renfrew Jct. to Eganville, Ont.....	18·90	
			201·40
	St. Lawrence and Ottawa—		
	Ottawa to Prescott, Ont ..	51·80	
	Chaudière Junction to Sussex St., Ottawa.	6·60	
			58·40
	Ontario and Quebec—		
	Mile End Junction to South End Lachine Bridge.....	9·10	
	Montreal, Windsor Station, to Toronto. .	339·00	
	London to Windsor ..	112·60	
	Toronto Junction to Strachan Avenue....	3·20	
	Leaside Junction to Union Station, Toronto	5·30	
			469·20
	Credit Valley—		
	Toronto Junction to St. Thomas.....	116·80	
	Streetsville Junction to Melville Junction..	31·60	
	Cataract to Elora.....	27·30	
			175·70
	West Ontario Pacific—London to Woodstock.....	26·60	
	Toronto, Grey and Bruce—		
	Toronto Junction to Owen Sound.....	116·80	
	Orangeville Junction to Teeswater.....	69·80	
	Glenora to Wingham.....	4·50	
			191·10
	Guelph Junction—		
	Guelph Junction on Credit Valley Ry. to Guelph.		15·25
	Toronto, Hamilton and Buffalo—		
	Desjardin Junction with Grand Trunk to Hamilton .....		2·06
	Montreal and Lake Maskinongé—		
	St. Félix to St. Gabriel de Brandon.....		12·90
	Montreal and Ottawa—		
	Vaudreuil toward Ottawa. ....	50·20	
	Rigaud to Pt. Fortune.....	7·3	
			57·50

TABLE showing Location of Railways, &c.—Continued.

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Canadian Pacific—Continued.			
Leased lines	New Brunswick System (in Canada)—		
	Vanceboro' to McAdam Junction	6·30	
	McAdam Junction to St. John	82·80	
	Fairville to Carleton	4·00	
	Fredericton Junction to Fredericton	22·10	
	McAdam Junction to St. Stephen	33·90	
	Watt " St. Andrew's	27·50	
	McAdam " Woodstock	51·80	
	Debec " Maine boundary	5·00	
	Woodstock to Maine boundary	59·40	
	Newbury Junction to Fredericton	58·40	
	Aroostock Junction to Edmunston	57·20	
		408·40	
	Manitoba South-western Colonization—		
	Manitou to Deloraine	100·40	
	Winnipeg to Glenboro'	101·90	
	Elm Creek to Carman	12·10	
		214·40	
	Columbia and Cootenay—		
	Nelson to Robson	27·70	
	Slocan Jct. to Slocan City	32·00	
	To Mouth of Kootenay River	0·80	
		60·50	
	Shuswap and Okanagan—		
	From Junction with C.P.R. at Sicamous to Lake Okanagan		51·00
	Nakusp and Slocan—		
	Nakusp on Arrow Lake to Three Forks of Carpenter's Creek, B.C.		36·90
	Cap de la Madeleine—		
	From Main Line C.P.R. at Junction with Piles branch to Cap de la Madeleine		2·32
	St. Stephen and Milltown, N.B.—		
	From Junction with C.P.R. St. Stephen to Milltown		4·64
	Tobique Valley—		
	Perth Centre to Plaster Rock		28·00
	Total mileage leased		2,016·27
	do owned		4,286·44
	do in Can. Pac. system		6,302·71
Canadian Government Railways.	Intercolonial—		
	Halifax to Point Lévis (via Harlaka)	674·87	
	North Street to deep water terminus Halifax	85	
	Dartmouth to Windsor Junction	12·12	
	Truro to Sydney	215·07	
	North Sydney Junction to North Sydney Station	4·43	
	New Glasgow to Pictou Landing	7·57	
	Stellarton to Oxford Junction	79·63	
	Browns Point to Pictou	1·70	
	Pugwash Junction to Pugwash Station	4·70	
	Painsec Junction to Point du Chêne	11·38	
	Moncton to St. John	89·22	
	Derby Junction to Indianatown	13·51	
	Dalhousie Branch	5·97	
	do to Wharf	40	
	Rimouski Branch	2·00	
	St. Charles Jct. to Chaudière Jct. (via St. Henri)	16·38	
	Hadlow to Chaudière Curve	5·66	
		1,145·46	

# Department of Railways and Canals.

TABLE showing Location of Railways, &c.—*Continued.*

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Canadian Government Rys.— <i>Con.</i>	Prince Edward Island—		
	Main Line—Alberton to Charlottetown... 105·30		
	Royalty Junction to Georgetown..... 41·00		
	Branch—Mount Stewart to Souris..... 38·40		
	do Alberton to Tignish ... 13·30		
	do Emerald to Cape Traverse..... 12·00		
		210·00	1,355·46
Caraget. . . . .	From Gloucester Junction, Intercolonial Railway, 5 miles south of Bathurst Station, easterly along the south shore of Baie des Chaleurs to Shippigan Harbour, N.B.....		68·00
Carillon and Grenville.....	Carillon to Grenville, Que., connecting at both termini with Ottawa River Navigation Company's steamers (Gauge, 5 ft. 6 in.).....		13·00
Central Ontario.....	From Pictou, in Prince Edward County, Ont., to Coe Hill from Mines, Wollaston, County of Hastings; connects with Grand Trunk at Trenton, Midland Railway, 2 miles west of Stirling, and with Ontario and Quebec, in Township of Rawdon.....		104·00
Central Railway of New Brunswick.....	From Norton Station, on the Intercolonial Railway, to Chipman.....		45·66
Coast Line, Nova Scotia.....	Yarmouth to Lockeport towards Halifax, 98 miles, of which 28·25 miles are in operation.....		30·80
Cobourg, Northumberland and Pacific.....	From Cobourg, Ont., to Junction with Central Ontario Railway, 49 miles under construction.....		
Cumberland Railway and Coal Company (formerly Spring Hill and Parrsboro').....	Spring Hill Junction, Intercolonial Railway, to Spring Hill Coal Mines, N. S., and Parrsboro', on the Bay of Fundy .....	32·00	
	Spring Hill and Oxford Branch, from Spring Hill Mines to Oxford Village on the Oxford and New Glasgow Branch, I. C. R.....	14·00	46·00
Dominion Atlantic, comprising Windsor and Annapolis, Yarmouth and Annapolis and Cornwallis Valley and lease of Windsor Branch of Intercolonial....	Windsor to Annapolis, N. S.....	84·00	
	Annapolis to Yarmouth.....	87·00	
	Branches—		
	Wilmot to Forbrook.....	3·50	
	From Kentville to Kingsport, on Basin of Minas (formerly Cornwallis Valley Railway).....	14·00	
	Windsor Branch of I. C. R.—Windsor to Windsor Junction, Intercolonial Railway, 14 miles from Halifax.....	32·00	220·50
Drummond County.....	Ste. Rosalie, Que., junction with Grand Trunk Railway, to St. Leonard, thence to Chaudière.....	115·97	
	St. Leonard to Nicolet and Ball's Wharf, on the St. Lawrence.....	17·06	
	Mitchell to Burrill's Mill.....	50	133·53
East Richelieu Valley.....	Constructed from Iberville to Clarenceville, Que., 18·22 miles not in operation.. . . .		
Elgin and Havelock.....	From Elgin, County of Albert, N. B., to Petitcodiac Junction with Intercolonial Railway; thence to Havelock in County of King's.....		27·00



TABLE showing Location of Railways, &c.—*Continued.*

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Erie and Huron .....	Rondeau, Lake Erie, Ont., to Sarnia, passing through the town of Chatham, Ont., connects with Canada Southern and Grand Trunk and Lake Erie and Detroit River Railways.....		76.75
Esquimalt and Nanaimo.....	Victoria to Wellington, Island of Vancouver.....		78.00
Fredericton and St. Mary's Railway Bridge.....	Over the St. John River, connecting the Fredericton Railway, at Fredericton, with the New Brunswick Railway and Canada Eastern Railway at St. Mary's.....		1.33
Grand Trunk (owned)—			
Main Line.....	From Point Edward to Point Lévis and Boundary Line, Vermont.....	719.33	
	From Niagara Falls to Windsor.....	229.32	
Branches.....	Connections at Toronto with G.W. and N., and N.W. Montreal to Dorval.....	4.75	948.65
	Sarnia Extension—Point Edward to Sarnia .....	10.12	
	Montreal leading to Wharfs .....	3.13	
	Arthabaskato Doucet's Landing, (Three Rivers Branch) .....	0.83	
	Kingston—Main line to Kingston City... ..	35.34	
	Waterloo and Berlin to Galt.....	2.25	
	St. Mary's to London ... ..	14.85	
	St. Lambert to Boundary Line, N.Y., and St. Isidore to Province Line.....	22.00	
	Blackwell to St. Clair Tunnel.....	65.50	
	Port Dover to Warton, Durham and Port Rowan ...	5.00	
	Brosseaus to Dundee and Valleyfield....	189.75	
	Jacques Cartier to Canadian Pacific Junction .....	81.14	
	Waterloo to Elmira .....	6.54	
	Belleville to Midland.....	10.17	
	Lindsay to Scarboro' Junction .....	163.96	
	" Haliburton.....	60.35	
	Whitby to Manilla.....	54.20	
	Lakefield Junction to Lakefield....	33.73	
	North Hastings Junction to Eldorado.....	11.66	
	Blackwater to Cobocok .....	22.21	
	Porth Hope to Omemee .....	36.35	
	Millbrook to Peterboro'.....	32.05	
	Stouffville to Lake Simcoe ... ..	12.35	
	Peterboro' to Chemong Lake.....	26.46	
	Coldwater to end of track.....	8.22	
	Connection, Merritton.....	1.50	
	" Stoney Creek.....	0.17	
	Loop Gages (N. and N. W. Divn.).....	2.08	
	Hamilton to Toronto.....	0.48	
	Loop Junction Cut Branch .....	36.64	
	Connection, Burlington East.....	0.36	
	" " West.....	0.13	
	Harrisburg to Guelph.....	0.21	
	Connection " (W. G. and B.).....	27.18	
	Harrisburg to Brantford.....	0.11	
	Brantford Branch Junction with G. T.....	7.76	
	Komoka to Sarnia.....	0.13	
	Wyoming to Petrolia.....	50.85	
	Fort Erie to Glencoe.....	4.71	
	Connection, Welland Junction, East.....	145.55	
	" " West.....	0.26	
	" Canfield Junction.....	0.50	
	" Simcoe (G. B. & L. E.).....	0.19	
	East Y. St. Thomas.....	0.24	
	Allanburg to Clifton Junction .....	0.32	
	Port Colborne to Port Dalhousie .....	8.33	
	Glencoe to Kingscourt Junction.....	25.14	
		21.04	

# Department of Railways and Canals.

TABLE showing Location of Railways, &c.—*Continued.*

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Grand Trunk— Branches— <i>Con.</i>	Guelph to Southampton .....	101·26	
	Palmerston to Kincardine .....	66·67	
	" connection.....	0·20	
	Hyde Park to Wingham Junction.....	68·88	
	Connction, Clinton Junction.....	0·13	
	Brantford Loop Line. ....	34·78	
	Toronto Belt Line, Swansea to Carleton.....	4·37	
	" Don to Fairbank Junction. ....	8·33	
	Toronto to Gravenhurst.....	111·60	
	Allandale to Collingwood.....	31·76	
	Hamilton to Allandale.....	93·82	
	" Port Dover.....	40·25	
	Collingwood to Meaford .....	20·50	
	Elmvale to Hillsdale. ....	8·28	
	Beeton Junction to Collingwood.....	39·83	
	Gravenhurst to Nipissing Junction with C. P. R. ..	111·37	
	Colwell to Penetanguishene.....	33·34	
	Park Head to Owen Sound .....	12·42	
	Cobourg to Harwood.....	15·00	
			2,049·58
	Total owned .....		2,998·23
	Leased and partly owned—		
	Buffalo and Lake Huron, Fort Erie to Goderich...	162·00	
	Leased or rented—		
	Wharf Branch, Montreal .....	1·75	163·75
	Total miles in Grand Trunk system.....		3,161·98
St. Clair Tunnel and approaches..	Under the St. Clair River, between Sarnia and Port Huron—connecting the Grand Trunk Railway with railroads in State of Michigan..... (Length of tunnel between portals 6,000 ft., cylindrical in section with clear inside diameter of 19 ft. 10 inches).		2·23
Great Eastern in Atlantic and Lake Superior system.....	Constructed from junction with South-eastern Railway at Yamaska to River St. Francis .....	6·00	
	Constructed from Nicolet to Junction with Grand Trunk Railway at St. Grégoire .....	7·00	
	Yamaska to Sorel .....	10·00	
			23·00
Great Northern .....	From St. Jérôme to Moncalm.....	28·00	
	From junction with Lower Laurentian Railway westward to Shawenegan .....	20·00	
	Main Line to Grand'Mère .....	1·00	49·00
Great North-west Central..	From junction with C.P.R. at Chater, westward to Hamiota .....		50·93
Gulf Shore.....	Junction with Caraqueet Railway at Pokemouche to Tracadie operated by Caraqueet Ry.....		16·78
Hamilton, Grimsby and Beams-ville (electric).....	Hamilton to Beamsville .....		23·00
Hamilton and Dundas (electric)..	Hamilton to Dundas.....		7·25
Hamilton Radial (electric).....	Hamilton to Burlington.....		11·00
Hampton and St. Martin, formerly St. Martin and Upham..	From Hampton on Intercolonial Ry. to St. Martin, County of St. John, N.B., on Bay of Fundy. ....		30·00
Hereford .....	From International Boundary to Dudswell, County Wolfe, connects with Canadian Pacific Railway at Cookshire, Maine Central at International boundary, and with Quebec Central at Dudswell.....	48·50	
	Dudswell to Lime Quarries (Dominion Lime Company)	4·80	53·30

TABLE showing Location of Railways, &c.—*Continued.*

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Hull Electric . . . . .	Hull to Aylmer and Branches. . . . .		13·63
Irondale, Bancroft and Ottawa . . . . .	From junction with Grand Trunk Railway, near Kinmount Station, to Bancroft Station . . . . .		50·00
Joggins, now Canada Coals and Railway Co . . . . .	Maccan Station, I.C.R., to Joggins Coal Mines . . . . .		12·00
Kaslo and Slocan . . . . .	From Kaslo to Sandon, B.C. . . . .	28·80	
	From Junction to Cody . . . . .	3·00	
Kent Northern . . . . .	Richibucto, N.B., to Kent Jct. Intercolonial Railway . . . . .	27·00	31·80
St. Louis and Richibucto . . . . .	Richibucto to St. Louis . . . . .	7·00	
Kingston and Pembroke . . . . .	Main Line—Kingston to Renfrew . . . . .	103·10	34·00
	Glendower Branch—Bedford to Zanesville Mine . . . . .	4·00	
	Robertsville Branch—To Robertsville Mines . . . . .	1·00	
	Branches—To Doran's Mills, Charcoal Work, McLaren's Mills, Bethlehem Mines, Lavant Mills, Clyde Forks Mills, Wilson's Mine, Caldwell's Mills, William's Mine, Cameron's Bay . . . . .	4·75	
	(Connects with Grand Trunk at Kingston, Canadian Pacific at Sharbot Lake and at Renfrew.) . . . . .		
Kingston, Napanee and Western . . . . .	Amalgamated with Bay of Quinté Railway : Napanee to Tamworth . . . . .	28·50	112·85
	Yarker to Harrowsmith . . . . .	7·00	
	Tamworth to Tweed . . . . .	20·95	
	Harrowsmith to Sydenham . . . . .	4·37	
			60·82
Lotbinière and Mégantic . . . . .	Lyster Station, Grand Trunk, to St. Jean des Chaillon . . . . .		30·34
L'Assomption . . . . .	L'Épiphanie Station, C.P.R., to L'Assomption . . . . .		3·00
Lake Erie and Detroit River . . . . .	From Walkerville, Ont., to Ridgetown . . . . .	84·05	
	Branch—Foster's to Decew's Mills . . . . .	4·00	88·05
London and Port Stanley . . . . .	London to Port Stanley on Lake Erie . . . . .		23·75
Lake Manitoba Railway and Canal Co. . . . .	From junction with Manitoba and North-western at Gladstone to Winnipegosis . . . . .		123·24
Lower Laurentian (formerly St. Lawrence, Lower Laurentian and Saguenay) . . . . .	From St. Tite, on C.P.R., to Rivière à Pierre, on Quebec and Lake St. John Railway (operated by Quebec and Lake St. John Ry) . . . . .		39·50
Manitoba and North Western . . . . .	Portage la Prairie to Yorkton . . . . .	223·05	
	Shell River Branch—Binscarth to Russell . . . . .	11·45	
	Leased Saskatchewan and Western—Minnedosa to Rapid City . . . . .	15·47	
Manitoba and South-eastern . . . . .	From Winnipeg south-easterly to west side of Lake of the Woods ; 45·60 miles under construction . . . . .		249·97
Midland of Nova Scotia (formerly Stewiacke Valley) . . . . .	From Windsor towards Truro, N.S.—38 miles under construction . . . . .		
Montfort Colonization . . . . .	From junction with Montreal and Western near St. Sauveur to Arundel . . . . .		33·00
Massawippi Valley . . . . .	From Lennoxville to Vermont boundary, there connecting with Connecticut and Passumpsic Rivers Railway ; also connects with Grand Trunk and C.P.R. at Lennoxville . . . . .	32·00	
	Branch—Stanstead Junction to Stanstead . . . . .	4·00	
Montreal and Vermont Junction . . . . .	From Junction with Stanstead, Shefford and Chambly Railway, 2½ miles east of St. Johns, P.Q., to Junction with Vermont and Canada Railway, at Vermont boundary ; also connects at Stanbridge with Lake Champlain and St. Lawrence Junction Railway . . . . .		36·00
			23·60



# Department of Railways and Canals.

TABLE showing Location of Railways, &c.—*Continued.*

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Montreal, Portland and Boston, now Montreal and Province Line .....	Junction with Grand Trunk at St. Lambert to Farnham.....	32·00	
	Marieville to St. Césaire.....	8·60	
Montreal and Atlantic (formerly South-eastern) .....	Main Line—West Farnham to Richford on International boundary .....	33·80	40·60
	Northern Division—Sutton Junction to Sorel.....	95·50	
	Between Newport and Richford—Part of Line in Canada.....	10·00	
		139·30	
	Leased—Lake Champlain and St. Lawrence Junction—Stanbridge to St. Guillaume .....	60·70	200·00
	(Connects with Connecticut and Passumpsic, Grand Trunk and Stanstead, Shefford and Chambly Rys.)		
Montreal Park and Island (electric)	City of Montreal and Suburbs.....		40·88
Montreal Island Belt Line (electric) .....	Hochelaga to Bout de l'Isle.....	12·12	
	Along La Salle St. Maisonneuve.....	55	12·67
Nelson and Fort Sheppard.....	From West Arm of Kootenay Lake near Nelson, to Fort Sheppard on International boundary, B.C.....		59·40
New Glasgow Iron, Coal and Railway Company, now Nova Scotia Steel Co.....	From Ferrona Junction, I.C.R., to Sunny Brae.....		12·50
New Brunswick and Prince Edward Island.....	From Sackville Station, Intercolonial Railway, to Cape Tormentine.....		36·00
Niagara Falls Park and River Electric Railway.....	Queenston to Chippewa.....		13·68
Northern Pacific and Manitoba ..	Winnipeg to International boundary.....	65·94	
	Portage Junction to Portage la Prairie.....	52·52	
	Morris to Brandon.....	145·24	
	Connection with C.P.R. at Winnipeg .....	1·24	
	Spurs on Brandon Branch.....	17	265·11
Nosbonsing and Nipissing.. ..	From Lake Nosbonsing to Lake Nipissing.....		5·50
Nova Scotia Central now Central (Nova Scotia) .....	From Middleton on the Windsor and Annapolis Railway to town of Lunenburg, on the Atlantic coast, N.S.....		74·00
Nova Scotia Southern.....	Shelburne to New Germany, 11 miles under construction		
Ontario, Belmont and Northern..	From Junction with Central Ontario Ry. to Iron Mines in Township of Belmont .....		9·60
Orford Mountain.....	Eastman, on C.P.R., to Kingsbury, Que .....		26·50
Oshawa Electric Railway.....	From Port Oshawa, Lake Ontario to Grand Trunk Ry. Station and through town of Oshawa.....		8·50
Ottawa and Gatineau.....	Canadian Pacific Railway Junction at Hull, Que., to Gracefield.....		56·50
Ottawa, Arnprior and Parry Sound.....	Ottawa to Depot Harbour, Lake Huron, near Parry Sound .....		263·80
Ottawa Valley in Atlantic and Lake Superior System.....	Lachute, on C.P.R., to St. Andrews on Ottawa River.....		7·00
Ottawa and New York.....	From Ottawa to International Boundary near Cornwall—56·79 miles under construction.....		
Philipsburg .....	Stanbridge Station of Canadian Pacific and Central Vermont Railways, to Philipsburg, Missisquoi Co. ....		7·50
Pontiac and Renfrew.....	From Wyman's Station, on Pontiac Pacific Junction Railway, to Bristol Iron Mines, County Pontiac, Que. ....		4·25
Pontiac Pacific Junction .....	From Junction with Canadian Pacific Railway at Aylmer, Que., to Waltham .....		70·60
Port Arthur, Duluth and Western	Port Arthur to Gunfint Lake on Minnesota boundary. (Connects with the C.P.R. at Port Arthur and Fort William.)		85·50
Qu'Appelle, Long Lake and Saskatchewan.....	From Canadian Pacific Railway at Regina, North-westerly to Long Lake and Prince Albert.....		253·96

TABLE showing Location of Railways, &c.—*Concluded.*

Name of Railway.	Description.	Distance.	
		Miles.	Total.
Quebec and Lake St. John. . . . .	Quebec to Roberval. . . . .	192·00	245·85
	Chambord Junction to Chicoutimi . . . . .	53·85	
Quebec Central. . . . .	Main Line—Sherbrooke to Harlaka Junction, Intercolonial Railway, 5 miles from Lévis, Que. . . . .	137·50	213·50
	Chaudière Branch, Beauce Junction to St. Francis. . . . .	15·00	
	Angus Branch—East Angus to Angus Mills. . . . .	1·00	
	Tring Mégantic—Tring Junction to Mégantic . . . . . (Connects with Grand Trunk, Canadian Pacific and Boston and Maine Rys. at Sherbrooke.)	60·00	
Quebec, Montmorency and Charlevoix. . . . .	Hedleyville, Parish of St. Roch, Quebec, to Cap Tourmente. . . . .		30·00
Red Mountain. . . . .	From International boundary Line B. C. to Rossland. . . . .		9·53
Stanstead, Shefford and Chambly	From Junction with Montreal and Vermont Junction Railway, near St. John, Que., easterly to Waterloo. . . . .		43·00
Shore Line (formerly Grand Southern) . . . . .	St. John to St. Stephen, N.B. . . . .		82·50
St. Catharines and Niagara Central. . . . .	St. Catharines, Ont., to Niagara Falls . . . . .		12·35
St. John Bridge and Railway Extension. . . . .	From St. John to Fairville, crosses St. John River at the Falls by a cantilever steel bridge, and connects Intercolonial Railway with New Brunswick Railway, C.P.R., included in Canadian Pacific System . . . . .		2·00
St. John Valley and Rivière du Loup. . . . .	From Fredericton, N.B., to Woodstock, N.B. (6 miles under construction) . . . . .		
Salisbury and Harvey (formerly Albert Railway) . . . . .	Salisbury to Albert, N.B. . . . .		45·00
St. Lawrence and Adirondack. . . . .	From Jct. with Canada Atlantic near Valleyfield to International Boundary. . . . .	19·80	33·00
	Beauharnois to Junction with Canadian Pacific at Adirondack Junction. . . . .	13·20	
South Shore (formerly Montreal and Sorel) . . . . .	From Junction with Grand Trunk at St. Lambert to Sorel, West. . . . .		44·67
Sydney and Louisbourg (Dominion Coal Co) . . . . .	Sydney Harbour to Louisbourg Harbour . . . . .	39·15	65·90
	Branches to coal Mines. . . . .	26·75	
Thousand Islands. . . . .	Gananoque on St. Lawrence River to Gananoque Station, G.T.R. . . . .		4·33
Témiscouata . . . . .	Rivière du Loup, Que., on Intercolonial, to Edmundston, N.B., on the New Brunswick Railway. . . . .	81·00	113·00
	Branch—Edmundston to Connors, on St. John River. . . . .	32·00	
Tilsonburg, Lake Erie and Pacific	From Port Burwell on Lake Erie to junction with Canada Southern Railway, north of Tilsonburg. . . . .		20·00
Toronto, Hamilton and Buffalo, including Brantford, Waterloo and Lake Erie. . . . .	Main line—Waterford Junction on Canada Southern to Welland Junction on Canada Southern, passing through City of Hamilton. . . . .	80·62	84·62
	Branch—Chantlers to Fonthill. . . . .	4·00	
United Counties. . . . .	Iberville Junction with Canadian Pacific Railway to St. Hyacinthe, thence to St. Robert Junction with Montreal and Atlantic, 4½ miles from Sorel. . . . .		61·00
Victoria and Sydney. . . . .	City of Victoria to Sydney, Vancouver Island. . . . .		16·26
Winnipeg and Hudson Bay, now Winnipeg Great Northern. . . . .	Winnipeg to Port Nelson on Hudson Bay. . . . . (Constructed 40 miles, Winnipeg to St. Laurent on Lake Manitoba). . . . .		40·00

SUMMARY STATEMENT OF CAPITAL

FOR THE

FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1898



A. NOTE.—With regard to Subsidies granted by Dominion Parliament, 60–61 Vic.

By 60–61 Vic., cap. 4.—A subsidy was authorized on certain mileage of this railway, specified in the Act of Parliament, of \$3,200 per mile, and a further subsidy, beyond the sum of \$3,200 per mile, of fifty per cent on so much of the average cost of the said specified mileage subsidized as is in excess of \$15,000 per mile, such subsidy not exceeding in the whole the sum of \$6,400 per mile.

The amounts of certain of the subsidies authorized by Parliament, 60–61 Vic., given in this Statement, include the determined portion of the subsidies, viz., the amounts produced by the \$3,200 per mile, but the other portion, being now an undetermined amount cannot be shown here.

Of the Railways shown in this Statement the following is the mileage subsidized under the said Act :—

Central Railway of New Brunswick.....	15	miles.
Coast Railway of Nova Scotia.....	61	do
Cobourg, Northumberland and Pacific.....	50	do
Dominion Eastern.....	65	do
Drummond County.....	42½	do
Great Northern.....	44	do
Gulf Shore.....	5½	do
Kingston, Smith's Falls and Ottawa.....	101	do
Ottawa, Arnprior and Parry Sound.....	56	do
Ottawa and Gatineau.....	20	do
Ottawa and New York.....	53·87	do
Philipsburg Junction.....	0 <sup>66</sup> / <sub>100</sub>	do
Pontiac Pacific Junction.....	7½	do
St. Lawrence and Adirondack.....	13½	do
St. Stephen and Milltown.....	1 <sup>14</sup> / <sub>100</sub>	do
Tilsonburg, Lake Erie and Pacific.....	3½	do
United Counties.....	1	do

## COLLEGE STUDENTS

A. See note c.





No. 2.—SUMMARY STATEMENT of the different descriptions of Rolling Stock, for the Year ended 30th June, 1898



Department of Railways and Canals.

## SUMMARY STATEMENTS

RELATING TO MILEAGE, ROLLING STOCK, CHARACTERISTICS OF  
ROADS, OPERATIONS, PASSENGERS AND FREIGHT CAR-  
RIED, EARNINGS, OPERATING EXPENSES  
AND ACCIDENTS



No. 3.—SUMMARY STATEMENT of Characteristics of

Number.	Name of Railway.	Length of Line.				Length of Siding.	Weight per Yard.	
		Completed. (Rails laid.)	Under Construc- tion.	Iron Rails.	Steel rails.		Iron Rails.	Steel Rails.
		Miles.	Miles.	Miles.	Miles.	Miles.	Lbs.	Lbs.
1	Alberta Railway and Coal Co .....	64·62			64·62	13·21		35
2	Albert Southern..... 16·0	19·00			19·00	·47		56
	Harvey Branch..... 3·0							
3	Atlantic & Lake Superior, comprising—							
	Baie des Chaleurs .....	98·00	{ 25·00 82·00 }		128·00	3·00		56
	Great Eastern .....	23·00						
	Ottawa Valley .....	7·00						
4	Bay of Quinté Railway and Nav- igation Co..... 4·00	64·82			64·82			50, 66, 60
	Kingston, Napanee & Western 60·82							
5	Berlin and Waterloo (Electric).....	3·00			3·00			60 & 42
6	Brockville, Westport and Sault St. Marie	45·00			45·00	2·00		56
7	Buctouche and Moncton .....	32·00			32·00	2·50		56
8	Calgary and Edmonton .....	295·07			295·07	9·81		56
9	Canada Atlantic .....	138·00						
	Central Counties..... 38·00	176·00			176·00	48·00		56 to 73
10	Canada Eastern .....	136·00			136·00	6·50		56½ & 60
11	*Canada Southern.....	382·19			382·19	166·10		60, 65, 80
12	Canadian Government Railways—							
	Intercolonial (not including Windsor Branch).....	1,145·46			1,145·46	161·25		
	Prince Edward Island .....	210·00		58·50	151·50	15·71	38	50, 52, 56
13	†Canadian Pacific Ry. (owned) 4286·44							
	Crow's Nest Pass Branch .....		288·75					
	Leased lines—							
	Fredericton .....	22·10						
	New Brunswick.....	175·00						
	New Brunswick & Canada.....	117·20						
	St. John and Maine.....	92·10						
	St. John Bridge and Rail- way Extension.....	2·60						
	St. Stephen and Milltown..	4·64						
	Tobique Valley.....	28·00						
	Cap de la Madeleine .....	2·32						
	Montreal and Lake Mask- inongé .....	12·90						
	Atlantic and North-west ..	201·40	6,302·71	37·50	6,302·71	726·86		52 to 80
	Montreal and Ottawa .....	57·50						
	Ontario and Quebec .....	469·20						
	St. Lawrence and Ottawa ..	58·40						
	Credit Valley.....	175·70						
	Guelph Junction.....	15·25						
	Toronto, Hamilton & Buffalo	2·06						
	Toronto, Grey and Bruce..	191·10						
	West Ontario Pacific .....	26·60						
	Manitoba South-western							
	Colonization .....	214·40						
	Columbia and Kootenay...	60·50						
	Nakusp and Slocan.....	36·90						
	Shuswap and Okanagan....	51·00						
14	Caraquet .....	68·00			68·00	3·25		50
15	Carillon and Grenville.....	13·00			13·00	·25		65
16	Coast Railway of Nova Scotia .....	30·80	45·00		30·80	2·08		56
17	Cobourg, Northumberland and Pacific..		49·00					
18	Central Ontario..... 104·00	113·60			113·60	11·00		42 & 56
	Ontario, Belmont & Northern 9·60							

\*95·21 miles double track.

† 14·20 miles double track.

# Department of Railways and Canals.

Roads, &c., for the year ended 30th June, 1898.

Number of Ties per Mile.	Nature of Rail Fastenings.	Number of Grain Elevators.		No. of Level crossings	No. of Overhead Bridges.	Height of Overhead Bridges above rail level.	No. Level Crossings of other Railways.	No. of Junctions with other Railways.	No. of Junctions with branch lines.	Radius of Sharpest Curve.	Number of Feet per Mile of heaviest gradient.	Gauge of Railway.	
		Guarded.	Not guarded.									Ft.	Number.
						Feet.				Ft.		Ft.	
2640	Plain fishplates . . . . .		2					2		573	53 3		1
2640	" . . . . .		11					2		955	120 4	8½	2
2640	" . . . . .		53	3	22			4		717	67 4	8½	3
3000	Plain and angle fishplates. . . . .		50				1	4		955	90 4	8½	4
2640	Plain fishplates . . . . .		23				2			48	264 4	8½	6
2640	Fisher bridge joint . . . . .		35					2		717	74 4	8½	6
2640	Plain fishplate. . . . .		12				1			816	52 4	8½	7
2640	Angle bars . . . . .	9	158					2		1146	40 4	8½	8
2816	Plain and angle plates. . . . .	7	139	3	22	10	5	1		2865	40 4	3½	9
2640	Fish " . . . . .	1	35				1	4	1	955	80 4	8½	10
3000	Joint splice, 4 and 6 bolts. . . . .	10	416	19	21-6	17	16	10		913	75 4	8½	11
2112	Plain and angle fishplates. . . . .	9	494	29	18½ to 35	11	29	22		694	65 4	8½	12
2640	" " . . . . .		964	2	17-6					196	90 3	6	
2640	" " . . . . .												
2650	Plain and angle bars . . . . .	13	33 3764	82	17 to 24	53	65	57		319	237 4	8½	13
2600	Plain fishplates . . . . .		12				1	1		1000	60 4	8½	14
1760	Chairs. . . . .	1	8	1	16					1910	100 5	6	15
2640	Angle bars. . . . .		21				1			955	79 4	8½	16
													17
2640	Plain fishplates . . . . .		102				3	5		955	105 4	8½	18

No. 3.—SUMMARY STATEMENT of Characteristics of

Number.	Name of Railway.	Length of Line.					Weight per Yard.	
		Completed. (Rails laid.)	Under Construc- tion.	Iron Rails.	Steel Rails.	Length of Siding.	Iron Rails.	Steel Rails.
		Miles.	Miles.	Miles.	Miles.	Miles.	Lbs.	Lbs.
19	Central of New Brunswick.....	45·66			45·66	2·00		56
20	Cumberland Ry. and Coal Co., including Springhill & Oxford Branch, 14 miles	46·00			46·00	10·00		56, 57
21	*Dominion Atlantic comprising— Windsor and Annapolis.... 87·50 Cornwallis Valley ..... 14·00 Yarmouth and Annapolis.. 87·00 Windsor Branch I.C.R. .... 32·00	220·50			220·50	10·00		56 to 72
22	†Drummond County .....	133·53			133·53	10·00		56 to 70
23	East Richelieu Valley.....		18·22					
24	Elgin and Havelock.....	27·00			27·00	2·00		56
25	Erie and Huron.....	76·75			76·75	4·78		54, 56
26	Esquimalt and Nanaimo.....	78·00			78·00	3·42		54, 56, 60
27	Fredericton & St. Mary's Ry. Bridge Co.	1·33			1·33	12		56
28	‡Grand Trunk..... 884·25 Great Western..... 561·80 Brantford, Norfolk & Port Burwell ..... 34·78 Buffalo and Lake Huron .. 162·00 Grand Trunk, Georgian Bay and Lake Erie..... 172·75 Owen Sound Branch ..... 12·42 London, Huron and Bruce. 69·01 Waterloo Junction..... 10·25 South Norfolk ..... 17·00 Wellington, Grey & Bruce. 168·13 Northern ..... 172·10 North Simcoe..... 33·34 Hamilton & North-western. 173·90 Northern and Pacific Jun't'n 111·37 Toronto Belt Line..... 12·70 Midland..... 166·78 Grand Junction..... 85·40 Toronto and Nipissing..... 85·00 Lake Simcoe Junction.... 26·50 Victoria ..... 53·25 Whitby, Port Perry and Lindsay ..... 46·50 Cobourg, Blairton and Mar- mora..... 15·00 Jacques Cartier Union .. 6·50 Montreal and Champlain Junction ..... 61·75 Beauharnois Junction..... 19·50	3,161·98		23·49	3,138·49	671·14	56 to 65	56 to 80
29	§Great Northern.....	49·00			49·00	3·00		56
30	Great North-west Central .....	50·93			50·93	1·99		58
31	Gulf Shore (operated by Caraquet Rd.)..	16·78			16·78	1·01		56
32	Hamilton, Grimsby & Beamsville (Elec)	23·00			23·00			50, 65
33	Hamilton and Dundas (Electric) .....	7·25			7·25	1·00		65
34	Hamilton Radial Ry. (Electric).....	11·00			11·00	50		65
35	Hampton and St. Martin.....	30·00			30·00	50		56
36	Hereford (including Dominion Lime Co. of 4·80 miles).....	53·30			53·30	5·51		56
37	¶Hull (Electric) .....	13·63			13·63	22		56

\* Running over I.C.R., Windsor Junction, to Halifax, 14 miles.  
† Leased to I.C.R. since 1st March, 1898.  
‡ 408·5 miles double track.

§ Branch lines.



Department of Railways and Canals.

Roads, &c., for the year ended 30th June, 1898.

Number of Ties per Mile.	Nature of Rail Fastening.	Number of Grain Elevators.		No. of Level crossings		No. of Overhead Bridges.	Height of Overhead Bridges above rail level.	No. Level Crossings of other Railways.	No. of Junctions with other Railways.	No. of Junctions with branch lines.	Radius of Sharpest Curve.	Number of Feet per Mile of heaviest gradient.	Gauge of Railway.		
		Guarded.	Not guarded.	Ft.	Number.										
2640	Plain fishplates . . . . .		21					1			816	74	4	8½	19
2600	" . . . . .		17					1	1		820	160	4	8½	20
2640	" . . . . .	1	109	2	22			3	2		637	79	4	8½	21
2640	Angle fishplates . . . . .		59					3	5	2	717	63	4	8½	22
	" . . . . .														23
2000	Plain fishplates . . . . .		24					1	1		717	90	4	8½	24
2640	" . . . . .		111					5	6		661	52	4	8½	25
2992	Angle fishplates . . . . .		15	1	23						573	80	4	8½	26
2564	" . . . . .		6						2		1433	50	4	8½	27
2640 to 3200	Fishplates and angle bars . . . . .	9	85	2736	238	15 10 to 29 10		60	76	78	1110 600	53 105	4	8½	28
2640	Angle and plain fishplates . . . . .		33					1	2		574	66	4	8½	29
2640	Plain fishplates . . . . .	11	24							1	955	324	4	8½	30
2600	" . . . . .		19							1	574	53	4	8½	31
2200	" and angle bars . . . . .		45					1	1		127	237	4	8½	32
2300	" . . . . .	1		1	14						573	200	4	8½	33
2640	Angle bars . . . . .		28	2	16			2			105		4	8½	34
2640	Plain fishplates . . . . .		18						1		955	90	4	8½	35
2800	" . . . . .		28					2	3		955	66	4	8½	36
2640	" . . . . .		3	1	22			1	2	3	193	26	4	8½	37

§ 21 m. from St Tite J'ct. to Shawenegan at Grand Mère is operated by Quebec and Lake St. John Ry.  
¶ 6·85 miles double track.

## No. 3.—SUMMARY STATEMENT of Characteristics of

Number.	Name of Railway.	Length of Line.				Length of Siding.	Weight per Yard.	
		Completed. (Rails laid.)	Under Construc- tion.	Iron Rails.	Steel Rails.		Iron Rails.	Steel Rails.
		Miles.	Miles.	Miles.	Miles.	Miles.	Lbs.	Lbs..
38	Irondale, Bancroft and Ottawa .....	50·00			50·00	2·50		56
39	Joggins (now Canada Coals & Ry. Co.)..	12·00			12·00	2·00		56
40	Kaslo and Slocan .....	31·80			31·80	1·60		45
41	Kent Northern (including St. Louis and Richibucto).....	34·00		3·50	30·50	2·00	67	56
42	Kingston and Pembroke .....	112·85		9·75	103·10	21·00	50 to 84	56
43	L'Assomption.....	3·00			3·00	·25	56	
44	Lake Erie and Detroit River .. 88·05 } London and Port Stanley... 23·75 }	111·80			111·80	14·00		56 & 67
45	Lake Manitoba Railway and Canal Co..	123·24			123·24	3·48		56
46	Lotbinière and Mégantic .....	30·34			30·34	6·35		56
47	Manitoba and North-western.. 234·50 } Saskatchewan and Western. 15·47 }	249·97			249·97	23·65		45-56
48	Manitoba and Southeastern .....		45·60			1·50		56
49	Massawippi Valley .....	36·00			36·00	2·50		50 & 60
50	Midland of Nova Scotia .....		38·00					60
51	Montfort Colonization.....	33·00			33·00	·71		56
52	*Montreal and Atlantic (formerly South-eastern)..... 139·30 } Lake Champlain and St. Law- rence Junction..... 60·70 }	200·00			200·00	31·90		56 to 72
53	+Montreal Park and Island (Electric) ..	40·88			40·88	·98		56
54	Montreal Island Belt Line ( " )...	12·67			12·67	·75		56 & 65
55	Montreal, Portland and Boston (now Montreal and Province Line.....	40·60		8·60	32·00	1·00	38	56
56	Montreal and Vermont Junction .....	23·60			23·60	2·00		60 & 72
57	Nelson and Fort Sheppard .....	59·40			59·40	3·70		56
58	New Brunswick & Prince Edward Island	36·00			36·00	1·50		56
59	+Niagara Falls Park and River (Electric)	13·68			13·68	0·89		56
60	Northern Pacific and Manitoba .....	265·11			265·11	30·74		56
61	Nosbonsing and Nipissing .....	5·50			5·50	1·25		56
62	Nova Scotia Central (now Central Rail- way of Nova Scotia) .....	74·00			74·00	3·50		56
63	Nova Scotia Southern .....		11·00					
64	Nova Scotia Steel Co. (formerly New Glasgow Iron Coal & Ry. Co.).....	12·50			12·50	3·87		56
65	Orford Mountain .....	26·50			26·50	1·00		56
66	Oshawa Electric Railway.....	8·50			8·50			64
67	Ottawa, Arnprior and Parry Sound (in- cluding Parry Sound Colonization).....	263·80			263·80	34·40		72
68	Ottawa and Gatineau.....	56·50			56·50	2·00		56
69	Ottawa and New York .....		56·79			3·24		65
70	Philipsburg Railway and Quarry Co ..	7·50			7·50			56
71	§Pontiac and Renfrew .....	4·25			4·25	·75		56
72	Pontiac Pacific Junction.....	70·60			70·60	3·50		56
73	Port Arthur, Duluth and Western..	85·50			85·50	4·00		56
74	Qu'Appelle Long Lake & Saskatchewan	253·96			253·96	7·75		56
75	Quebec Central .....	213·50			213·50	20·50		56 & 70
76	Quebec and Lake St. John.....	245·85			245·85	18·50		56 & 60
	† Lower Laurentian.....	39·50			39·50	2·00		56
77	Quebec, Montmorency and Charlevoix..	30·00			30·00	2·00		56
78	Red Mountain.....	9·53			9·53	·85		56
79	Salisbury and Harvey .....	45·00		39·50	5·50	6·00	56	56
80	Shore Line, New Brunswick.....	82·50		82·50		2·50	50	

\* Line from Sorel to Drummondville 36·6 miles not in operation.

† 4·50 miles is not under traffic.

+ 14·10 miles double track.

# Department of Railways and Canals.

Roads, &c., for the year ended 30th June, 1898—*Continued.*

Number of Ties per Mile.	Nature of Rail Fastening.	Number of Grain Elevators.		No. of Level crossings	No. of Overhead Bridges.	Height of Overhead Bridges above rail level.	No. Level Crossings of other Railways.	No. of Junctions with other Railways.	No. of Junctions with branch lines	Radius of Sharpest Curves.	Number of Feet per Mile of heaviest gradient.	Gauge of Railway.	
		Guarded.	Not guarded.										Number.
						Feet.				Ft.		Ft.	
2640	Plain fishplates		16					1		1000	60	4 8½	38
3000	"		7					1	1	955	79	4 8½	39
2640	Angle fishplates		13	1		22½			1	193	171	3 0	40
2432	Fishplates		10			1	1			1000	60	4 8½	41
2640	Plain and angle fishplates.		56		3 16 & 21½		6	6	13	955	79	4 8½	42
2500	Plain fishplates		1					1		955	20	4 8½	43
2700	Plain and angle fishplates.	2	125	6	19 6		7	8		1433	52	4 8½	44
2600	Angle bars		88					1		2865	70	4 8½	45
2640	Plain and angle plates		10				1	2		715	80	4 8½	46
2700	Plain and angle fishplates	33	188					3	2	955	105	4 8½	47
													48
2800	Plain fishplates	1	20	1	19		1	2	1	488	76	4 8½	49
										955	53	4 8½	50
2600	"		20	1	22			1		573	132	4 8½	51
2640	"		164	1	19 6		6	6	2	441	140	4 8½	52
2640	Angle bars	1	23				3			40	319	4 8½	53
2640	Angle bars		9				3	2	2	573	26	4 8½	54
3000	Plain fishplates and chairs		21				3	1	2			4 8½	55
3000	"		51					3				4 8½	56
2640	Angle bars							1		478	132	4 8½	57
2400	Plain fishplates		26					1		750	66	4 8½	58
2640	Angle bars	1	16	2	14 & 22			2	1	115	300	4 8½	59
2640	"	23	6	262			6	2	3	574	63	4 8½	60
3000	Plain fishplates		2				1	1		955	132	4 8½	61
2640	Angle bars		32	1	20			1		819	80	4 8½	62
													63
2640	Plain fishplates		5					1	1	955	79	4 8½	64
2640	Angle bars		17					1		955	74	4 8½	65
2640	"		28				1	1		80	211	4 8½	66
2900	"	2	4	54	7	22	3	2		955	66	4 8½	67
2640	Plain fishplates		44					1		573	105	4 8½	68
2750	Angle bars			1	22		2	2		2865	39	4 8½	69
2816	Plain fishplates		7					1	1	955	52	4 8½	70
2640	"							1		717	106	4 8½	71
2640	Plain and angle fishplates		52						1	1146	53	4 8½	72
2640	Plain fishplates		5				3	1		573	95	4 8½	73
2640	" and angle bars	4	53					1	1	1446	65	4 8½	74
2640	Plain and angle plates		115				2	7	2	882	76	4 8½	75
2640	"	1	56					3	2	717	105	4 8½	76
2640	"		29					3		917	105	4 8½	77
2640	Plain fishplates		10					1		1433	42	4 8½	78
2640	Angle bars									288	184	4 8½	79
2600	Plain fishplates		27	1	15			1		717	80	4 8½	79
2992	"		15	5	23		3	3		573	85	4 8½	80

‡ 11·43 miles double track.

§ Not in operation.



No. 3.—SUMMARY STATEMENT of Characteristics of

Number.	Name of Railway.	Length of Line.				Length of Siding.	Weight per Yard.	
		Completed. (Rails laid.)	Under Construc- tion.	Iron Rails.	Steel Rails.		Iron Rails.	Steel Rails.
		Miles.	Miles.	Miles.	Miles.	Miles.	Lbs.	Lbs.
81	Stanstead, Shefford and Chambly. . . .	43·00	.....	12·00	31·00	2·00	60	60
82	St. Catharines and Niagara Central....	12·35	.....	.....	12·35	2·18	.....	56
83	<sup>a</sup> St. Clair Tunnel, Yard and Approaches	2·23	.....	.....	2·23	11·00	.....	100
84	St. John Valley and River du Loup.....	.....	6·00	.....	.....	.....	.....	.....
85	St. Lawrence and Adirondack.....	33·00	.....	.....	33·00	5·30	.....	72, 80
86	Sydney & Louisbourg (Dominion Coal Co)	65·90	.....	10·13	55·77	29·50	50	58, 80
87	South Shore (formerly Montreal & Sorel)	44·67	.....	.....	44·67	2·00	.....	56
88	Temiscouata . . . . .	113·00	.....	.....	113·00	3·00	.....	56
89	Tilsonburg Lake Erie and Pacific . . . .	20·00	3·50	.....	20·00	2·25	.....	56, 65
90	Thousand Islands . . . . .	4·33	.....	.....	4·33	1·00	.....	56
91	<sup>b</sup> Toronto Hamilton and Buffalo (includ- ing Brantford, Waterloo & Lake Erie	84·62	.....	.....	84·62	11·44	.....	60 to 80
92	United Counties . . . . .	61·00	.....	.....	61·00	4·50	.....	56
93	Victoria and Sydney . . . . .	16·26	.....	.....	16·26	1·20	.....	50
94	Winnipeg, Great Northern (formerly Winnipeg and Hudson Bay). . . . .	40·00	.....	.....	40·00	.....	.....	.....
Total . . . . .		16,870·20	706·36	247·97	16,622·23	2,247·46	.....	.....

<sup>a</sup> 6,000 feet in length, inside diameter of 19·10.

<sup>b</sup> 2·26 miles double track.

Department of Railways and Canals.

Roads, &c., for the year ended 30th June, 1898—*Concluded.*

Number of Ties per Mile.	Nature of Rail Fastenings.	Number of Grain Elevators.	No. of Level crossings		No. of Overhead Bridges.	Height of Overhead Bridges above rail level.	No. Level Crossings of other Railways.	No. of Junctions with other Railways.	No. of Junctions with branch lines.	Radius of Sharpest Curves.	Number of Feet per Mile of heaviest gradient.		Gauge of Railway.	Number.
			Guarded.	Not guarded.										
						Feet.				Ft.		Ft.		
2640	Fish plates and chairs . . . . .			42	1	18	3	4	....	1910	60	4'8 <sup>3</sup> / <sub>8</sub>		81
2640	Plain fishplates . . . . .			20	3	22	2	2	....	717	79	4'8 <sup>3</sup> / <sub>8</sub>		82
	Angle bars . . . . .										105	4'8 <sup>1</sup> / <sub>2</sub>		83
														84
3000	" . . . . .			26	1	22	2	3	....	1146	57	4'8 <sup>1</sup> / <sub>2</sub>		85
2640	" . . . . .			26	2	18	1	1	7	1433	70	3, 3, 4'8 <sup>1</sup> / <sub>2</sub>		86
2640	Plain fishplates . . . . .			15				2	....	1910	28	4'8 <sup>1</sup> / <sub>2</sub>		87
2640	Plain and angle fishplates . . . . .			38			1	2	1	819	79	4'8 <sup>1</sup> / <sub>2</sub>		88
2640	Angle bars . . . . .	3		14	1	21	1	2	....	955	52	4'8 <sup>1</sup> / <sub>2</sub>		89
3000	" . . . . .			8					1	660	84	4'8 <sup>1</sup> / <sub>2</sub>		90
3000	" . . . . .		6	122	10	21 <sup>1</sup> / <sub>2</sub>	1	7	1	673	89	4'8 <sup>1</sup> / <sub>2</sub>		91
2640	Plain fishplates . . . . .			50			4	5	....	717	40	4'8 <sup>1</sup> / <sub>2</sub>		92
2464	" . . . . .			13						637	105	4'8 <sup>1</sup> / <sub>2</sub>		93
														94
			108	171	11,646	432	243	349	227					

## No. 4.—SUMMARY STATEMENT of the Operations of the

Number.	Name of Railway.	Mileage.	TRAIN MILEAGE.			
			Passenger Trains.	Freight Trains.	Mixed Trains.	Total Train Mileage.
1	Alberta Railway and Coal Co. ....	64·62			33,266	33,266
2	Albert Southern ..... 16·00	19·00		5,000		5,000
	Harvey Branch ..... 3·00					
3	Atlantic and Lake Superior, comprising—					
	Baie des Chaleurs ..... 98·00	98·00		5,265	55,188	60,453
	Great Eastern, 23 miles not under traffic .....					
	Ottawa Valley, 7 miles not under traffic .....					
4	Bay of Quinté Railway and Navigation Co. .... 4·00	64·82			126,813	126,813
	Kingston, Napanee & Western. 60·82					
5	Berlin and Waterloo (electric).....	3·00	72,760			72,760
6	Brockville, Westport & Sault Ste. Marie.	45·00	846	2,026	30,510	33,382
7	Buctouche and Moncton .....	32·00			20,786	20,786
8	Calgary and Edmonton .....	295·07		99,083	76,005	175,088
9	Canada Atlantic..... 138·00	176·00	225,726	291,402	30,234	547,362
	Central Counties..... 38·00					
10	Canada Eastern .....	136·00	91,215	78,531	34,058	203,804
11	Canada Southern .....	382·19	1,261,688	2,421,786	159,932	3,843,406
12	Canadian Government Railways—					
	Intercolonial, exclusive of Windsor Branch, 32 miles. ....	1,145·46	1,382,858	2,572,151		3,955,009
	Prince Edward Island .....	210·00	91,418	155,292		246,710
13	Canadian Pacific Ry., owned. 4,283·34					
	Leased Lines—					
	Fredericton .....	22·10				
	New Brunswick. ....	175·00				
	New Brunswick & Canada .....	117·20				
	St. John and Maine.....	92·10				
	St. John Bridge and Ry.					
	Extension .....	2·00				
	St. Stephen and Milltown .....	4·64				
	Tobique Valley.. ....	28·00				
	Cap de la Madeline ...	2·32				
	Montreal and Lake Mas-					
	kinongé.....	11·00				
	Atlantic and North-west.	201·40	6,298·35	6,432,190	10,034,856	17,702,406
	Montreal and Ottawa....	57·50				
	Ontario and Quebec.....	469·20				
	St. Lawrence and Ottawa .....	58·40				
	Credit Valley.....	175·70				
	Guelph Junction .....	15·25				
	Toronto, Hamilton and					
	Buffalo .....	2·70				
	Toronto, Grey and Bruce.	191·10				
	West Ontario Pacific ....	26·60				
	Manitoba South-western					
	Colonization .....	214·40				
	Columbia and Kootenay..	60·50				
	Nakusp and Slocan.....	36·90				
	Shuswap and Okanagan..	51·00				
14	Caraguet.....	68·00			40,160	40,160
15	Carillon and Grenville.....	13·00	5,600	300		5,900
16	Central Ontario..... 104·00	113·60	14,862	7,480	82,168	104,510
	Ontario, Belmont & Northern. 9·60					
17	Central of New Brunswick.....	45·66			32,180	32,180
18	Coast Railway of Nova Scotia.....	30·80	2,001		25,964	27,965
19	Cumberland Railway and Coal Co. ....	32·00			61,515	61,515



Department of Railways and Canals.

Year and Mileage, for the Year ended 30th June, 1898.

Engine Mileage.	Total Number of Passengers Carried.	Tons of Freight of 2,000 lbs. Handled.	Average Rate of Speed of Passen- ger Trains—Miles per Hour.	Average Rate of Speed of Freight Trains—Miles per Hour.	Number.	Remarks.
36,895	2,416	39,989	14	...	1	From Lethbridge to Coutts on International Boundary, the portion of this railway from Dunmore to Lethbridge, 107 miles, has been purchased by Can. Pac. Ry. Co.
5,000	.....	8,276	.....	15	2	
60,453	11,500	11,055	17	.....	3	Baie des Chaleurs Ry., from Metapedia to West Paspebiac, 98 miles, under traffic for 5 months only ; from Metapedia to Caplin, 80 miles, under traffic for 7 months only.
126,813	55,230	217,631	.....	.....	4	
.....	215,749	.....	6	.....	5	
33,562	24,192	13,597	20	20	6	
21,814	10,309	20,868	.....	16	7	
175,088	27,055	127,847	19	19	8	
674,661	204,029	740,275	40	18	9	
211,004	45,932	114,517	30	18	10	
4,921,002	522,727	3,869,602	40	24	11	
4,871,387	1,528,444	1,434,576	25	15	12	Also on leased lines—130·61 miles of Drummond County Ry., Chaudière to Ste. Rosalie and branch, 4 months ending June 30, 1898 ; 1·18 miles of Grand Trunk, Chaudière Curve to Chaudière, 4 months ending June 30, 1898 ; 37·62 miles of Grand Trunk, Ste. Rosalie Junction to Montreal, 4 months ending June 30, 1898.
344,415	126,510	57,539	20	14		
23,018,123	3,327,368	5,493,030	30	20	13	Can. Pac. Ry. has also leased running powers on the Grand Trunk between Toronto and Desjardins Canal Junction, 36·2 miles.
.....	.....	.....	.....	.....		Toronto, Hamilton and Buffalo Ry. leased to C. P. Ry. from Poulette St., Hamilton, to junction with Grand Trunk, Desjardins Canal, 2·06 miles ; and C. P. Ry. has running powers from Poulette St. to Hamilton Station, ·64 miles.
40,160	5,476	10,686	15	.....	14	
6,300	6,100	285	25	20	15	
104,510	51,826	100,872	25	20	16	
32,180	8,867	10,913	.....	15	17	
28,402	29,004	1,853	20	18	18	Operated with the rolling stock of Caraquet Ry.
112,257	17,965	321,578	.....	20	19	Springhill and Oxford Branch, 14 miles not under traffic.

## No. 4.—SUMMARY STATEMENT of the Operations of the Year

Number.	Name of Railway.	Mileage.	TRAIN MILEAGE.			
			Passenger Trains.	Freight Trains.	Mixed Trains.	Total Train Mileage.
20	Dominion Atlantic, comprising— Windsor and Annapolis..... 87·50 Cornwallis Valley..... 14·00 Yarmouth and Annapolis..... 87·00 Windsor Branch, Intercolonial. 32·00	220·50	226,603	255,480	.....	482,083
21	Drummond County.....	133·53	27,213	4,270	28,500	59,903
22	Elgin and Havelock.....	27·00	.....	.....	16,740	16,740
23	Erie and Huron.....	76·75	65,104	48,236	42,186	155,526
24	Esquimalt and Nanaimo.....	78·00	92,397	42,858	42,064	177,319
25	Fredericton & St. Mary's Ry. Bridge Co. ....	1·33	.....	.....	.....	.....
26	Grand Trunk..... 884·25 Great Western..... 561·80 Brantford, Norfolk and Port Burwell..... 34·78 Buffalo and Lake Huron..... 162·00 Grand Trunk, Georgian Bay and Lake Huron..... 172·75 Owen Sound Branch..... 12·42 London, Huron and Bruce... 69·01 Waterloo Junction..... 10·25 South Norfolk..... 17·00 Wellington, Grey and Bruce.. 168·13 Northern..... 172·10 North Simcoe..... 33·34 Hamilton and North-western. 173·90 Northern Pacific Junction.... 111·37 Toronto Belt Line..... 12·70 Midland .. 166·78 Grand Junction..... 85·40 Toronto and Nipissing..... 85·00 Lake Simcoe Junction..... 26·50 Victoria .. 53·25 Whitby, Port Perry & Lindsay 46·50 Jacques Cartier Union..... 6·50 Montreal & Champlain Junc- tion .. 61·75 Beauharnois Junction .. 19·50	3,146·98	5,569,416	9,337,678	1,082,198	15,989,292
27	Great Northern .....	28·00	896	.....	18,018	18,914
28	Great North-west Central. ....	50·93	344	3,076	12,664	16,084
29	Gulf Shore, operated by Caraquet Railway	16·78	.....	.....	3,410	3,410
30	Hamilton, Grimsby and Beamsville (elec- tric).....	23·00	237,262	.....	.....	237,262
31	Hamilton and Dundas (electric).....	7·25	* 30,000	.....	.....	* 30,000
32	Hamilton Radial (electric) .....	11·00	149,848	.....	.....	149,848
33	Hampton and St. Martin's, formerly St. Martin's and Upham.....	30·00	.....	.....	14,000	14,000
34	Hull (electric).....	13·63	358,273	14,880	.....	373,153
35	Hereford.....	53·30	21,840	49,732	.....	71,572
36	Irondale, Bancroft and Ottawa.....	50·00	36,270	.....	.....	36,270
37	Joggins, now Canada Coal & Railway Co. ....	12·00	1,500	1,500	12,780	15,780
38	Kaslo and Slocan.....	31·80	12,193	13,512	10,882	36,587
39	Kent, Northern, including St. Louis and Richibucto. ....	34·00	.....	.....	18,366	18,366
40	Kingston and Pembroke.....	112·85	65,104	5,622	61,974	132,700
41	L'Assomption.....	3·00	.....	.....	6,396	6,396
42	Lake Erie and Detroit River.... 88·05 London and Port Stanley.... 23·75	111·80	155,542	.....	71,791	227,333
43	Lake Manitoba Railway and Canal Co..	123·24	.....	.....	44,405	44,405

# Department of Railways and Canals.

and Mileage, for the Year ended 30th June, 1898—*Continued.*

Engine Mileage.	Total Number of Passengers Carried.	Tons of Freight of 2,000 lbs. Handled.	Average Rate of Speed of Passen- ger Trains—Miles per Hour.	Average Rate of Speed of Freight Trains—Miles per Hour.	Number.	Remarks.
482,083	207,249	157,743	30	15	20	Running powers over Intercolonial Ry. from Halifax to Windsor Junction, 14 miles.
61,000	12,726	73,310	25	15	21	For 8 months only, ending March 1, 1898, balance of year the Drummond County Ry. has been operated by Intercolonial Ry.
16,740	4,055	8,410	16	.....	22	
169,722	100,999	115,107	25	15	23	
177,319	42,039	52,476	27	20	24	
.....	.....	.....	.....	.....	25	Included in Canada Eastern Ry., which Com- pany runs their trains across this bridge, paying tolls.
18,946,265	6,041,551	8,773,322	35	20	26	Running powers over Chaudière Branch of Intercolonial, 6 miles. Cobourg, Blairton and Marmora Ry. not under traffic.
18,914	6,544	6,448	25	25	27	Also 21 miles (from Lower Laurentian Junc- tion to Shawenegan, 20 miles, and branch to Grand Mere pulp mills, 1 mile) leased to Quebec and Lake St. John Ry.
17,672	4,710	37,989	20	17	28	
3,410	837	2,217	15	.....	29	
.....	280,146	2,845	15	.....	30	
.....	162,776	.....	10	.....	31	*During the 6 months ended 31 Dec. 1897.
.....	479,513	370	.....	.....	32	
14,000	2,331	3,930	15	.....	33	
14,880	497,294	42,886	20	25	34	Leased from Can. Pac. Ry., Hull to Aylmer, 7·33 miles.
71,572	17,166	72,072	20	12	35	
38,135	4,333	10,607	18	.....	36	
28,170	7,411	58,864	20	15	37	
41,161	35,983	41,571	12	12	38	
18,366	5,700	3,503	18	.....	39	
132,700	33,593	84,868	25	18	40	
6,396	4,078	368	15	.....	41	
320,860	281,537	211,127	...	.....	42	
63,229	11,226	33,299	18	.....	43	Also running powers on Man. and N. W. Ry. from Portage la Prairie to Gladstone Junc- tion, 36 miles.



## No. 4.—SUMMARY STATEMENT of the Operations of the Year

Number.	Name of Railway.	Mileage.	TRAIN MILEAGE.			
			Passenger Trains.	Freight Trains.	Mixed Trains.	Total Train Mileage.
44	Lotbinière and Mégantic.....	30·34			9,493	9,493
45	Manitoba and North-western... 234·50 } Saskatchewan and Western... 15·47 }	249·97	52,491	50,675	32,509	135,675
46	Massawippi Valley.....	36·00	70,824	71,035	31,307	173,166
47	Montfort Colonization.....	33·00	16,150	4,678	10,928	31,756
48	Montreal and Atlantic, formerly South-eastern... 102·7 } Lake Champlain and St. Law- rence Junction..... 60·7 }	163·40	88,653	143,453	82,137	314,243
49	Montreal Island Belt Line (electric).....	12·67	230,726	2,978		233,704
50	Montreal Park and Island ".....	40·88	680,835			680,835
51	Montreal, Portland and Boston, now Montreal and Province Line.....	40·60	27,502	19,282	11,048	57,832
52	Montreal and Vermont Junction.....	23·60	68,804	102,768	2,112	173,684
53	Nelson and Fort Sheppard.....	59·40	37,111	29,890		67,001
54	New Brunswick & Prince Edward Island	36·00	3,472	9,860	22,392	35,724
55	Niagara Falls Park and River (electric)..	13·68	223,273	255		223,528
56	Northern Pacific and Manitoba.....	265·11	102,227	92,973	34,593	229,793
57	Nosbonsing and Nipissing.....	5·50		13,310		13,310
58	Nova Scotia Central, now Central Rail- way of Nova Scotia.....	74·00			50,173	50,173
59	Nova Scotia Steel Co., formerly New Glasgow Iron, Coal and Railway Co.	12·50			15,500	15,500
60	Orford Mountain.....	26·50	17,430	5,240	8,237	30,907
61	Oshawa Electric Railway.....	8·50	47,035	12,705		59,740
62	Ottawa and Gatineau.....	56·50	17,320	960	37,560	55,840
63	Ottawa, Arnprior and Parry Sound.....	263·80	254,527	341,510		596,037
64	Philipsburg Railway and Quarry Co.....	7·50	720	286		1,006
65	Pontiac and Pacific Junction.....	70·60	1,848	852	46,802	49,502
66	Port Arthur, Duluth and Western.....	85·50	930		16,140	17,070
67	Qu'Appelle, Long Lake & Saskatchewan.	253·96			57,398	57,398
68	Quebec and Lake St. John..... 242·00 } Great Northern..... 21·00 } Lower Laurentian..... 35·00 }	298·00	97,113	65,965	77,987	241,065
69	Quebec Central.....	213·50	137,850	236,511	49,804	424,165
70	Quebec, Montmorency and Charlevoix...	30·00	47,846	7,962		55,808
71	Red Mountain.....	9·53	12,223	13,688		25,911
72	Salisbury and Harvey.....	45·00			28,170	28,170
73	Shore Line—New Brunswick.....	82·50	995		51,645	52,640
74	Stanstead, Shefford and Chambly.....	43·00	33,762	31,744	11,189	76,695
75	St. Clair Tunnel.....	2·23				
76	St. Catharines and Niagara Central.....	12·35	12,000	2,000	6,000	20,000
77	St. Lawrence and Adirondack.....	33·00	108,921	3,769	37,961	150,651
78	Sydney and Louisbourg.....	65·90	37,800	98,760		136,560
79	South Shore, formerly Montreal & Sorel.	44·67	30,408		30,048	60,456
80	Témiscouata.....	113·00	8,654		90,320	98,974
81	Tilsonburg, Lake Erie and Pacific.....	20·00	12,000		7,000	19,000
82	Thousand Islands.....	4·33			15,980	15,980
83	Toronto, Hamilton and Buffalo.....	84·62	151,160	55,241	42,689	249,090
84	United Counties.....	61·00	41,784		42,864	84,648
85	Victoria and Sydney, B.C.....	16·26	410		23,725	24,135
		16,717·64	19,305,693	26,868,366	4,514,424	50,688,283

# Department of Railways and Canals.

and Mileage, for the Year ended 30th June, 1898—*Concluded.*

Engine Mileage.	Total Number of Passengers Carried.	Tons of Freight of 2,000 lbs. Handled.	Average Rate of Speed of Passen- ger Trains—Miles per Hour.	Average Rate of Speed of Freight Trains—Miles per Hour.	Number.	Remarks.
9,493	6,161	23,157	25	.....	44	
172,106	35,449	107,929	27	15	45	
173,166	75,106	155,359	25	12	46	Also running powers on Grand Trunk from Sherbrooke to Lennoxville, 3 miles.
39,286	5,800	6,778	15	15	47	
561,661	157,615	541,964	30	18	48	Line from Sorel to Drummondville, 36·6 miles, not under traffic.
.....	330,946	5,432	20	12	49	
.....	1,188,786	.....	9	.....	50	
57,832	63,718	29,063	30	12	51	
173,684	107,925	916,394	40	15	52	
67,001	33,730	50,312	20	12	53	
40,130	14,351	30,610	20	15	54	
.....	421,446	660	9	8	55	
287,235	54,101	202,878	27	13	56	
14,760	.....	271,750	.....	20	57	
54,803	32,776	23,877	20	.....	58	Also running powers on Dominion Atlantic, from Middleton Junction to Middleton, 33 miles.
35,150	7,127	140,930	15	.....	59	
30,907	4,984	23,083	25	15	60	
.....	100,534	33,713	.....	.....	61	
55,980	45,657	16,655	30	20	62	
638,007	104,214	366,884	30	15	63	
1,006	372	838	25	20	64	
51,148	22,922	18,173	30	20	65	
17,929	3,926	27,427	20	15	66	
57,398	3,583	21,634	17	17	67	
319,883	153,669	199,441	25	12	68	4·50 miles of Lower Laurentian not under traffic; 21·00 miles of Great Northern oper- ated by Quebec and Lake St. John Ry.
454,021	140,541	236,437	25	15	69	Also running powers on Intercolonial from Harlaka Junction to Lévis, 5 miles.
69,847	221,040	16,027	21	21	70	
25,911	24,427	48,749	15	8	71	
29,958	8,906	29,495	18	18	72	
52,940	12,006	10,850	25	20	73	
76,695	95,843	898,730	30	12	74	
52,073	.....	.....	.....	.....	75	
20,000	15,837	76,083	25	20	76	
160,885	111,268	159,861	35	20	77	Running powers on G. T. Ry., Valleyfield Beauharnois, 13·20 miles; also running pow- ers on Can. Pac. Ry. from Adirondack Junction to Montreal, 8·70 miles.
142,700	54,658	1,131,972	25	17	78	
60,456	96,362	10,394	30	22	79	
98,998	14,677	32,215	22	16	80	
19,000	15,000	5,829	30	30	81	
15,980	19,350	16,961	.....	.....	82	
388,512	127,743	451,149	45	25	83	2·06 miles, from Poulette St., Hamilton, to junction with Grand Trunk at Desjardin's Canal, is leased to Can. Pac. Ry. (see note on C. P. Ry.)
86,648	27,613	39,415	30	18	84	
24,135	19,294	18,464	25	.....	85	
60,103,944	18,444,049	28,785,903				

## No. 5.—SUMMARY STATEMENT of Description of

Number.	Name of Railway.	Mileage.	Flour.		Grain.		Live
			Barrels.	Tons.	Bushels.	Tons.	
1	Alberta Railway and Coal Co. ....	64·62	50	5	6,500	110	780
2	Albert Southern. ....	16·00					
	Harvey Branch. ....	3·00	120	12			
3	Atlantic and Lake Superior, comprising—						
	Baie des Chaleurs. ....	98·00					
	Great Eastern, 23 miles not under traffic						
	Ottawa Valley, 7 miles not under traffic	98·00	6,889	689	64,600	1,292	240
4	Bay of Quinté Navigation Co. ....	4·00					
	Kingston, Napanee and Western ..	60·82	20,040	2,004	99,453	2,735	5,323
5	Berlin and Waterloo (Electric) .....	3·00					
6	Brockville, Westport & Sault Ste. Marie	45·00	19,884	1,987	103,592	3,125	6,408
7	Buctouche and Moncton. ....	32·00					
8	Calgary and Edmonton. ....	295·07	22,606	2,260	1,103,050	23,340	26,455
9	Canada Atlantic .....	138·00					
	Central Counties. ....	38·00	266,770	26,677	3,466,139	97,052	29,230
10	Canada Eastern. ....	136·00	57,554	5,755	57,966	985	1,414
11	Canada Southern. ....	382·19	1,986,510	198,651	26,212,438	558,500	666,699
12	Canadian Government Railways—						
	Intercolonial, exclusive of Windsor Branch, 32 miles. ....	1,145·46	987,408	98,740	1,551,372	27,615	89,301
	Prince Edward Island. ....	210·00	19,590	1,959	510,272	8,703	19,069
13	Canadian Pacific Ry. owned. ....	4,283·34					
	Leased lines—						
	Fredericton. ....	22·10					
	New Brunswick .....	175·00					
	New Brunswick & Canada .....	117·20					
	St. John and Maine. ....	92·10					
	St. John Bridge and Railway Extension. ....	2·00					
	St. Stephen and Milltown. ....	4·64					
	Tobique Valley. ....	28·00					
	Cap de la Madeleine. ....	2·32					
	Montreal & L. Maskinongé .....	11·00					
	Atlantic and North-west. ....	201·40					
	Montreal and Ottawa. ....	57·50	3,216,308	321,630	41,960,741	1,071,597	694,028
	Ontario and Quebec. ....	469·20					
	St. Lawrence and Ottawa. ....	58·40					
	Credit Valley .....	175·70					
	Guelph Junction. ....	15·25					
	Toronto, Hamilton and Buffalo. ....	2·70					
	Toronto, Grey and Bruce. ....	191·10					
	West Ontario Pacific. ....	26·60					
	Manitoba South-western Colonization. ....	214·40					
	Columbia and Kootenay. ....	60·50					
	Nakusp and Slocan. ....	36·90					
	Shuswap and Okanagan .....	51·00					
14	Caracquet. ....	68·00	7,500	750	750	15	40
15	Carillon and Grenville. ....	13·00					120
16	Central Ontario. ....	104·00					
	Ontario, Belmont & Northern .....	9·60	5,530	542	232,000	5,850	3,994
17	Central of New Brunswick. ....	45·66					
18	Coast Railway of Nova Scotia. ....	30·80	3,181	318	15,522	388	12
19	Cumberland Railway and Coal Co. ....	32·00	7,542	754	23,155	393	35
20	Dominion Atlantic, comprising—						
	Windsor and Annapolis. ....	87·50					
	Cornwallis Valley. ....	14·00					
	Yarmouth and Annapolis. ....	87·00	117,068	13,511			9,827
	Windsor Branch of Intercolonial. ....	32·00					



Department of Railways and Canals.

Freight carried for the Year ended 30th June, 1898.

Stock.	Lumber of all kinds except Firewood.		Firewood.		Manu- factured Goods.	All other Articles.	Total Weight Carried.	Number.	Remarks.
	Tons.	Feet.	Tons.	Cords.	Tons.	Tons.	Tons.		
260	1,500,000	1,420	.....	.....	270	*37,924	39,989	1	*37,750 tons coal.
.....	5,775,000	8,250	.....	.....	.....	14	8,276	2	
53	1,420,000	2,130	... ..	.....	2,160	4,731	11,055	3	
2,129	55,388,000	96,929	9,756	14,633	44,663	54,538	217,631	4	
1,021	441,347	661	.....	.....	5,695	1,108	13,597	5	
.....	4,550,000	5,456	5,257	9,580	1,533	*4,299	20,868	6	
9,874	31,546,786	41,848	339	508	34,642	15,375	127,847	7	*Coal and stone.
7,308	231,473,000	318,275	24,740	40,822	35,424	214,717	740,275	8	
359	25,285,000	37,928	16,488	20,610	26,709	22,171	114,517	9	
222,233	.....	291,342	68,112	34,056	571,490	1,993,330	3,869,602	10	
14,451	254,093,816	317,617	29,896	52,318	319,608	604,227	1,434,576	11	
2,420	3,319,000	5,849	*2,287	4,212	34,396	.....	57,539	12	*Fire wood and tan bark.
186,771	806,762,789	1,069,281	189,420	325,106	1,474,152	1,044,493	5,493,030	13	
20	4,000,000	6,000	200	250	1,000	2,651	10,686	14	
60	.....	.....	.....	.....	40	185	285	15	
1,997	10,605,000	13,256	17,218	34,437	32,873	*11,917	100,872	16	*9,106 tons iron ore.
.....	3,500,000	5,440	1,614	828	1,942	*2,703	10,913	17	*Coal.
6	348,094	522	8	12	413	194	1,853	18	
18	7,372,100	9,215	.....	.....	5,930	*305,268	321,578	19	*Coal.
2,014	20,000,000	32,482	1,242	2,064	34,868	*72,804	157,743	20	*Consisting general produce & minerals.

No. 5.—SUMMARY STATEMENT of Description of

Number.	Name of Railway.	Mileage.	Flour.		Grain.		Live
			Barrels.	Tons.	Bushels.	Tons.	No.
21	Drummond County . . . . .	133·53	12,465	1,246	13,219	225	2,504
22	Elgin and Havelock . . . . .	27·00	1,493	149	3,216	53	342
23	Erie and Huron . . . . .	76·75	294,912	25,505	676,035	19,410	55,543
24	Esquimalt and Nanaimo . . . . .	78·00	3,380	338	10,500	293	3,719
25	Fredericton and St. Mary's Railway Bridge Co. . . . .	1·33					
26	Grand Trunk . . . . . 884·25						
	Great Western . . . . . 561·80						
	Brantford, Norfolk and Port Burwell . . . . . 34·78						
	Buffalo and Lake Huron . . . 162·00						
	Grand Trunk, Georgian Bay and Lake Erie . . . . . 172·75						
	Owen Sound Branch . . . . . 12·42						
	London, Huron and Bruce . . 69·01						
	Waterloo Junction . . . . . 10·25						
	South Norfolk . . . . . 17·00						
	Wellington, Grey and Bruce . 168·13						
	Northern . . . . . 172·10						
	North Simcoe . . . . . 33·34	3,146·98	4,858,260	485,826	50,914,720	1,272,868	1,966,425
	Hamilton & North-western . 173·90						
	Northern and Pacific Junt'n . 111·37						
	Toronto Belt Line . . . . . 12·70						
	Midland . . . . . 166·78						
	Grand Junction . . . . . 85·40						
	Toronto and Nipissing . . . . 85·00						
	Lake Simcoe Junction . . . . 26·50						
	Victoria . . . . . 53·25						
	Whitby, Port Perry and Lindsay . . . . . 46·50						
	Jacques Cartier Union . . . . 6·50						
	Montreal and Champlain Junction . . . . . 61·75						
	Beauharnois Junction . . . . 19·50						
27	Great Northern . . . . .	28·00	15,403	1,540	12,300	205	5
28	Great North-west Central . . .	50·93		159	784,466	23,834	3,500
29	Gulf Shore . . . . .	16·78	3,000	300	1,000	17	10
30	Hamilton, Grimsby and Beamsville (Electric) . . . . .	23·00					
31	Hamilton Dundas (Electric) . . .	7·25					
32	Hamilton Radial Railway (Electric) .	11·00					
33	Hampton and St. Martin's, formerly St. Martin's and Upham . . . . .	30·00					
34	Hull (Electric) . . . . .	13·63	22,277	2,231	306,633	6,121	5,105
35	Hereford . . . . .	53·30	8,610	861	21,358	598	100
36	Irondale, Bancroft and Ottawa . . .	50·00	6,727	653			1,980
37	Joggins, now Canada Coals and Ry. Co.	12·00	1,168	103	4,736	77	5
38	Kaslo and Slocan . . . . .	31·80	392	39	9,398	160	33
39	Kent Northern, including St. Louis and Richibucto . . . . .	34·00	3,581	358	14,641	427	7
40	Kingston and Pembroke . . . . .	112·85	10,350	1,035	29,500	885	90
41	L'Assomption . . . . .	3·00	1,180	118	1,500	30	
42	Lake Erie and Detroit River . . . 88·05						
	London and Port Stanley . . . 23·75	111·80	16,926	1,828	901,771	21,853	32,258
43	Lake Manitoba Railway and Coal Co. .	123·24	10,460	1,046	411,400	12,234	2,826
44	Lotbinière and Megantic . . . . .	30·34	1,500	150	8,000	50	40
45	Manitoba and North-western . 234·50						
	Saskatchewan and Western . . 15·47	249·97	82,864	8,286	2,273,367	61,383	20,543
46	Massawippi Valley . . . . .	36·00	6,200	620	275,000	5,500	1,000
47	Montfort Colonization . . . . .	33·00	3,800	380	8,000	136	
48	Montreal and Atlantic, form- erly South-eastern . . . . . 102·70						
	Lake Champlain and St. Lawrence Junction . . . . . 60·70	163·40	386,951	38,695	4,781,123	95,921	16,107

# Department of Railways and Canals.

Freight carried for the Year ended 30th June, 1898—*Continued.*

Stock.	Lumber of all kinds except Firewood.		Firewood.		Manu- factured Goods.	All other Articles.	Total Weight Carried.	Number.	Remarks.
	Tons.	Feet.	Tons.	Cords.	Tons.	Tons.	Tons.		
277	9,567,845	14,221	4,623	8,799	6,058	42,484	73,310	21	For 8 months ending 1st March, 1898. See note on State- ment No. 4.
151	3,780,000	6,300	97	195	1,313	249	8,410	22	
5,748	9,500,000	12,007	429	906	15,598	35,933	115,107	23	
532	4,144,114	6,449	4,500	5,031	4,614	35,219	52,476	24	
.....	.....	.....	.....	.....	.....	.....	.....	25	Included in Canada Eastern Ry.
393,285	455,306,500	910,613	147,723	221,584	954,488	4,534,668	8,773,332	26	
2	420,000	420	1,210	2,057	1,491	733	6,448	27	
503	2,500,000	3,320	1,800	881	6,832	2,460	37,989	28	
5	200,000	350	160	240	.....	1,305	2,217	29	
.....	.....	.....	.....	.....	.....	2,845	2,845	30	
.....	.....	.....	.....	.....	.....	.....	.....	31	
.....	.....	.....	.....	.....	370	.....	370	32	
.....	1,890,000	3,317	17	35	.....	578	3,930	33	
745	16,892,882	23,740	3,333	4,795	2,305	2,949	42,886	34	
103	20,246,000	30,369	6,819	13,638	14,204	12,299	72,072	35	
445	1,690,000	2,478	3,495	5,242	1,789	.....	10,607	36	
1	753,195	1,089	.....	.....	.....	*57,594	58,864	37	*Including coal and hay.
11	1,224,699	1,836	20	30	1,296	38,199	41,571	38	
4	20,000	20	414	511	2,183	.....	3,503	39	
45	24,800,000	37,200	8,141	15,030	26,338	4,335	84,868	40	
.....	20,000	30	.....	.....	32	158	368	41	
9,007	.....	74,128	.....	8,424	95,887	.....	211,127	42	
1,572	1,750,000	2,429	3,238	4,858	4,176	6,984	33,299	43	
20	6,340,000	11,510	2,750	4,120	100	7,207	23,157	44	*3,060 cords bark.
8,212	8,962,330	11,203	950	1,085	14,277	3,483	107,929	45	
550	44,400,000	61,050	.....	.....	3,600	84,039	155,359	46	30,600 tons ore and copper matte.
.....	1,496,000	2,244	815	1,630	788	1,600	6,778	47	
3,782	72,302,373	96,630	12,275	18,413	180,246	108,277	541,964	48	



No. 5.—SUMMARY STATEMENT of Description of

Number.	Name of Railway.	Mileage.	Flour.		Grain.		Live
			Barrels.	Tons.	Bushels.	Tons.	
49	Montreal Island Belt Line (Electric) ..	12·67	150	15	.....	.....	.....
50	Montreal Park and Island (Electric)...	40·88	.....	.....	.....	.....	.....
51	Montreal, Portland and Boston, now Montreal and Province Line.....	40·60	10,380	1,038	54,700	1,641	120
52	Montreal and Vermont Junction.....	23·60	661,240	66,124	7,456,666	223,700	317,546
53	Nelson and Fort Sheppard.. . . .	59·40	3,740	374	5,310	109	860
54	New Brunswick and Prince Edward Island.....	36·00	19,217	1,921	23,898	426	1,439
55	Niagara Falls Park and River Electric Railway .....	13·68	.....	.....	.....	.....	.....
56	Northern Pacific and Manitoba.....	265·11	11,550	1,155	2,326,137	64,696	8,631
57	Nosbonsing and Nipissing.....	5·50	.....	.....	.....	.....	.....
58	Nova Scotia Central, now Central Railway of Nova Scotia.....	74·00	12,356	1,235	1,140	20	450
59	Nova Scotia Steel Co., formerly New Glasgow Iron, Coal and Ry. Co.....	12·50	560	56	1,900	37	.....
60	Orford Mountain.....	26·50	3,940	386	7,108	155	1,580
61	Oshawa Electric Railway.....	8·50	1,030	103	76,727	2,110	3
62	Ottawa and Gatineau .....	56·50	13,069	1,307	85,778	1,210	3,902
63	Ottawa, Amprior and Parry Sound...	263·80	150,700	15,070	1,912,636	53,553	17,794
64	Philipsburg Railway and Quarry Co...	7·50	.....	.....	.....	.....	.....
65	Pontiac Pacific Junction.....	70·60	11,700	1,167	271,044	5,168	4,549
66	Port Arthur, Duluth and Western....	85·50	310	31	5,144	87	84
67	Qu'Appelle, Long Lake and Saskat- chewan .....	253·96	13,886	1,389	353,643	10,025	5,338
68	Quebec and Lake St. John... 242·00 } Lower Laurentian..... 35·00 } Great Northern .....	298·00	51,794	5,179	33,340	668	3,126
69	Quebec Central .....	213·50	121,843	12,184	40,164	1,204	12,950
70	Quebec, Montmorency and Charlevoix.	30·00	4,521	452	16,246	361	24
71	Red Mountain.....	9·53	2,120	212	4,040	178	237
72	Salisbury and Harvey .....	45·00	3,974	397	18,500	314	231
73	Shore Line.....	82·50	6,251	625	6,540	111	325
74	Stanstead, Shefford and Chambly....	43·00	564,210	56,421	7,398,133	221,944	312,000
75	St. Clair Tunnel .....	2·23	.....	.....	.....	.....	.....
76	St. Catharines and Niagara Central...	12·35	1,918	192	27,460	701	110
77	St. Lawrence and Adirondack.. . . .	33·00	14,310	1,431	166,280	4,157	638
78	Sydney and Louisbourg .....	65·90	9,750	975	.....	.....	25
79	South Shore, formerly Montreal and Sorel.....	44·67	2,130	208	8,941	152	395
80	Témiscouata .....	113·00	14,106	1,410	17,456	262	206
81	Tilsonburg, Lake Erie and Pacific.....	20·00	1,000	100	58,486	1,553	7,875
82	Thousand Islands.....	4·33	1,250	125	31,127	856	1,283
83	Toronto, Hamilton and Buffalo.....	84·62	22,740	2,274	566,222	11,325	16,944
84	United Counties.....	61·00	13,300	1,330	98,100	1,962	684
85	Victoria and Sydney, B.C.....	16·26	604	60	19,436	401	1,175
		16,717·64	13,543,179	1,422,656	150,478,112	3,933,066	4,060,975

# Department of Railways and Canals.

Freight carried for the Year ended 30th June, 1898—*Concluded.*

Stock.	Lumber of all kinds except Firewood.		Firewood.		Manu- factured Goods.	All other Articles.	Total Weight Carried.	Number.	Remarks.
Tons.	Feet.	Tons.	Cords.	Tons.	Tons.	Tons.	Tons.		
.....	371,500	651	1,320	660	1,352	2,754	5,432	49	
55	2,584,000	3,875	700	95	2,461	*19,898	29,063	51	*8,107 tons hay.
46,888	18,080,000	33,890	3,990	5,700	105,713	*434,379	916,394	52	*30,237 tons hay.
344	.....	2,760	243	365	3,473	42,887	50,312	53	
134	10,592,000	17,710	1,281	2,367	2,208	5,844	30,610	54	
4,747	20,715,200	30,894	19,198	33,597	17,875	660	660	55	
.....	26,500,000	271,750	.....	.....	.....	49,914	202,878	56	
69	5,074,992	15,171	2,740	4,110	2,681	591	23,877	58	
.....	93,017	1,160	200	400	1,142	*138,135	140,930	59	*Including iron ores,
251	7,372,800	8,192	3,236	5,340	1,486	7,273	23,083	60	coal, &c.
1	1,831,990	3,206	1,288	1,931	9,360	17,002	33,713	61	
901	1,864,000	2,794	1,331	2,398	5,657	2,388	16,655	62	
4,449	135,767,000	186,680	6,942	11,455	16,789	78,888	366,884	63	
.....	88,000	88	144	210	140	400	838	64	
767	1,888,000	2,817	1,863	3,101	3,963	1,190	18,173	65	
71	1,874,720	7,145	6,440	11,710	182	8,201	27,427	66	
2,506	1,793,200	2,269	799	1,200	3,587	658	21,634	67	
570	67,416,000	98,094	*27,607	49,680	10,412	34,838	199,441	68	*7,400 cords pulp wood.
4,318	83,594,164	125,391	506	950	7,715	84,675	236,437	69	*Pulp wood, lime and
22	526,679	2,824	1,965	1,759	2,899	7,710	16,027	70	produce.
119	.....	3,227	5,836	8,754	1,628	34,631	48,749	71	
115	9,010,000	11,262	2,163	4,055	312	*13,040	29,495	72	Including plaster and
108	1,520,000	1,520	56	84	2,364	6,038	10,850	73	hay.
46,800	18,000,000	33,745	3,913	5,595	105,420	*428,805	898,730	74	*30,660 tons hay.
33	84,000	2,152	173	337	16,230	56,438	76,083	76	
319	35,957,333	53,936	1,448	965	7,359	91,694	159,861	77	
12	1,000,000	2,000	.....	.....	150	*1,128,835	1,131,972	78	*Including 1,127,635 tons coal.
987	849,832	1,274	94	176	2,546	5,051	10,394	79	
103	15,664,590	18,653	3,248	4,272	1,359	6,156	32,215	80	
684	971,121	785	50	125	1,822	760	5,829	81	
501	933,714	1,634	.....	.....	5,756	8,089	16,961	82	
8,472	9,650,000	11,814	2,758	1,379	20,336	395,549	451,149	83	
344	7,921,000	11,931	1,513	2,701	1,576	19,571	39,415	84	
93	178,830	312	6,734	13,468	1,144	2,986	18,464	85	
1,000,777	2,522,702,739	4,548,460	664,746	1,035,879	4,332,890	12,512,175	28,785,903		

### No. 6.—SUMMARY STATEMENT of Earnings

Number.	Name of Railway.	Mileage.	Passenger Traffic.	Freight Traffic.	Mails and Express Freight.
			\$ cts.	\$ cts.	\$ cts.
1	Alberta Railway and Coal Co. ....	64·62	6,715 04	32,197 02	975 55
2	Albert Southern..... 16·00	19·00		3,106 96	
	Harvey Branch..... 3·00				
3	Atlantic and Lake Superior, comprising—				
	Baie des Chaleurs..... 98·00				
	Great Eastern, 23 miles not under traffic..	98·00	9,201 11	12,246 09	855 13
	Ottawa Valley, 7 " " ..				
4	Bay of Quinté Ry. and Navigation Co. 4·00	64·82	19,877 42	112,748 54	7,560 00
	Kingston, Napanee and Western.. 60·82				
5	Berlin and Waterloo Electric.....	3·00	9,169 36		353 34
6	Brockville, Westport and Sault Ste. Marie....	45·00	11,287 00	14,191 78	2,679 21
7	Buctouche and Moncton.....	32·00	4,432 31	11,544 07	
8	Calgary and Edmonton.....	295·07	96,250 17	258,064 97	7,256 08
9	Canada Atlantic..... 138·00	176·00	164,348 86	485,886 62	16,611 05
	Central Counties..... 38 00				
10	Canada Eastern.....	136·00	29,131 38	92,192 02	4,168 08
11	Canada Southern.....	382·19	916,573 18	3,310,013 71	227,469 10
12	Canadian Government Railways—				
	Intercolonial.....	1,145·46	1,053,864 64	1,857,740 06	206,065 15
	Prince Edward Island.....	210·00	63,734 61	75,845 60	19,009 65
13	Canadian Pacific Railway owned..... 4,283·34				
	Leased Lines—				
	Fredericton..... 22·10				
	New Brunswick..... 175·00				
	New Brunswick and Canada..... 117·20				
	St. John and Maine..... 92·10				
	St. John Bridge and Ry. Extension..... 2·00				
	St. Stephen and Milltown.. 4·64				
	Tobique Valley..... 28·00				
	Cap de la Madeline..... 2·32				
	Montreal and Lake Maskinongé.. 11·00				
	Atlantic and North-west..... 201·40				
	Montreal and Ottawa..... 57·50	6,298·35	6,339,199 08	16,007,158 37	1,113,877 57
	Ontario and Quebec..... 469·20				
	St. Lawrence and Ottawa.. 58·40				
	Credit Valley..... 175·70				
	Guelph Junction..... 15·25				
	Toronto, Hamilton and Buffalo... 2·70				
	Toronto, Grey and Bruce..... 191·10				
	West Ontario Pacific..... 26·60				
	Manitoba, South-western Colon- ization..... 214·40				
	Columbia and Kootenay..... 60·50				
	Nakusp and Slocan..... 36·90				
	Shuswap and Okanagan..... 51·00				
14	Caracquet.....	68·00	4,512 35	13,806 18	1,974 45
15	Carillon and Grenville.....	13·00	1,677 83	233 91	
16	Central Ontario..... 104·00	113·60	24,988 78	64,271 34	10,054 09
	Ontario, Belmont and Northern.. 9·60				
17	Central of New Brunswick.....	45·66	5,038 68	6,460 03	700 02
18	Coast Ry. of Nova Scotia.....	30·80	11,786 00	2,846 32	
19	Cumberland Railway and Coal Co.....	32·00	8,829 95	11,551 49	2,404 87
20	Dominion Atlantic, comprising—				
	Windsor and Annapolis..... 87·50				
	Cornwallis Valley..... 14·00	220·50	327,984 87	209,743 27	41,325 60
	Yarmouth and Annapolis..... 87·00				
	Windsor Branch, Intercolonial... 32·00				
21	Drummond County.....	133·53	8,260 86	64,915 98	2,497 38
22	Elgin and Havelock.....	27·00	1,295 44	5,236 67	716 60
23	Erie and Huron.....	76·75	42,037 63	65,013 53	7,984 38
24	Esquimalt and Nanaimo.....	78·00	54,871 70	53,804 33	2,929 68
25	Fredericton and St. Mary's Ry. Bridge Co.....	1·33	1,004 72	2,857 92	



# Department of Railways and Canals

for the Year ended 30th June, 1898.

Other Sources.	Total Gross Earnings.	Total Net Earnings.	Proportion of Earnings to Working Expenses.	Earnings per Train Mile.	Number.	Remarks.
\$ cts.	\$ cts.	\$ cts.	p. c.	Cts.		
90,361 53	130,249 14	52,828 28	168	391 54	1	
.....	3,106 96	564 36	122	62 13	2	
7,100 00	29,402 33	6,440 66	128	48 63	3	
2,407 35	142,593 31	57,918 50	168	112 44	4	
.....	9,522 70	1,382 25	117	13 07	5	
40 21	28,198 20	764 37	97	84 47	6	
386 05	16,362 43	2,012 20	114	78 71	7	
1,342 91	362,914 13	199,706 25	222	207 27	8	
47,719 49	714,566 02	178,934 68	133	130 54	9	
2,044 68	127,536 16	41,176 48	147	62 57	10	
4,573 33	4,458,629 32	1,411,114 72	146	116 00	11	
.....	3,117,669 85	139,978 66	95	78 83	12	See note with reference to leased lines in No. 4—Summary Statement of operations.
360 75	158,950 61	72,468 13	68	64 43		
2,010,561 16	25,470,796 18	10,786,005 53	173	143 88	13	
1,040 49	21,333 47	9,320 09	69	53 12	14	
.....	1,911 74	1,568 86	55	32 40	15	
647 91	99,962 12	13,657 16	116	95 64	16	
.....	12,198 73	8,510 98	59	37 90	17	
87 38	14,719 70	4,317 05	77	52 63	18	
*72,763 24	95,549 55	45,469 97	190	155 32	19	*Coal.
.....	579,053 74	118,581 67	125	120 11	20	
8,098 67	83,772 89	37,908 53	182	139 85	21	For 8 months ending 1st March, 1898.
22 40	7,271 11	1,506 60	83	43 43	22	
581 30	115,616 84	31,124 13	137	74 33	23	
10,604 00	122,209 71	163,547 46	43	68 92	24	
.....	3,862 64	2,127 54	222	.....	25	Receipts from tolls on trains run by Canada Eastern Railway.

No. 6.—SUMMARY STATEMENT of Earnings

Number.	Name of Railway.	Mileage.	Passenger	Freight	Mails
			Traffic.	Traffic.	and Express
			\$ cts.	\$ cts.	\$ cts.
26	Grand Trunk .....	884·25			
	Great Western .....	561·80			
	Brantford, Norfolk and Port Bur-				
	well .....	34·78			
	Buffalo and Lake Huron .....	162·00			
	Grand Trunk, Georgian Bay and				
	Lake Erie .....	172·75			
	Owen Sound Branch .....	12·42			
	London, Huron and Bruce .....	69·01			
	Waterloo Junction .....	10·25			
	South Norfolk .....	17·00			
	Wellington, Grey and Bruce .....	168·13			
	Northern .....	172·10			
	North Simcoe .....	33·34	3,146·98	4,753,519 59	12,345,695 74
	Hamilton and North-western .....	173·90			896,745 86
	Northern and Pacific Junction .....	111·37			
	Toronto Belt Line .....	12·70			
	Midland .....	166·78			
	Grand Junction .....	85·40			
	Toronto and Nipissing .....	85·00			
	Lake Simcoe Junction .....	26·50			
	Victoria .....	53·25			
	Whitby, Port Perry and Lindsay ..	46·50			
	Jacques Cartier Union .....	6·50			
	Montreal and Champlain Junction ..	61·75			
	Beauharnois Junction .....	19·50			
27	Great Northern .....	28·00	2,278 41	3,649 26	96 00
28	Great North-west Central .....	50·93	4,439 83	43,691 44	230 05
29	Gulf Shore .....	16·78	343 81	1,764 85	
30	Hamilton, Grimsby and Beamsville (Electric) ..	23·00	34,775 00	6,000 00	2,060 00
31	Hamilton and Dundas (Electric) .....	7·25	16,620 76	1,303 14	
32	Hamilton Radial (Electric) .....	11·00	26,355 99	779 53	
33	Hampton and St. Martins, formerly St. Martins				
	and Upham .....	30·00	1,315 44	2,197 15	
34	Hull (Electric) .....	13·63	35,407 59	13,506 69	580 00
35	Hereford .....	53·30	11,077 63	23,449 23	1,298 52
36	Irondale, Bancroft and Ottawa .....	50·00	2,794 20	9,397 67	713 70
37	Joggins, now Canada Coals and Ry. Co. ....	12·00	2,338 00	24,811 36	443 22
38	Kaslo and Slocan .....	31·80	32,065 88	104,692 68	2,132 91
39	Kent Northern, including St. Louis and Richi-				
	bucto .....	34·00	3,379 32	5,900 80	888 20
40	Kingston and Pembroke .....	112·85	27,676 50	87,836 13	8,643 72
41	L'Assomption .....	3·00	817 45	167 37	
42	Lake Erie and Detroit River .....	88·05			
	London and Port Stanley .....	23·75	80,335 72	111,169 70	7,862 92
43	Lake Manitoba Ry. and Canal Co. ....	123·24	23,484 91	57,535 31	1,071 83
44	Lotbinière and Mégantic .....	30·34	2,427 38	7,536 69	
45	Manitoba and North-western .....	234·50			
	Saskatchewan and Western .....	15·47	249·97	66,070 32	222,552 31
46	Massawippi Valley .....	36·00	50,706 58	91,393 64	1,971 90
47	Montfort Colonization .....	33·00	1,692 13	3,210 01	89 12
48	Montreal and Atlantic, formerly South				
	eastern .....	102·70			
	Lake Champlain and St. Lawrence				
	River .....	60·70	163·40	92,277 28	177,704 73
49	Montreal Island Belt Line (Electric) .....	12·67	30,581 46	1,173 12	325 00
50	Montreal Park and Island (Electric) .....	40·88	100,178 50		
51	Montreal, Portland and Boston, now .....				
	Montreal and Province Line .....	40·60	22,434 18	18,875 79	2,705 54
52	Montreal and Vermont Junction .....	23·60	47,213 94	110,735 18	5,057 08
53	Nelson and Fort Sheppard .....	59·40	56,437 55	49,914 24	3,617 47

# Department of Railways and Canals.

for the Year ended 30th June, 1898—*Continued.*

Other Sources.	Total Gross Earnings.	Total Net Earnings.	Proportion of Earnings to Working Expenses.	Earnings per Train Mile.	Number.	Remarks.
\$ cts.	\$ cts.	\$ cts.	p. c.	Cts.		
400,049 22	18,396,010 41	6,859,302 41	159	115 05	26	
.....	6,023 67	— 275 43	96	31 84	27	
997 43	49,358 75	1,188 73	102	306 88	28	
.....	2,108 66	180 45	109	61 83	29	
165 00	43,000 00	20,649 10	192	18 11	30	
1,743 75	19,667 65	8,899 23	183	65 56	31	
367 13	27,502 65	14,540 47	212	18 35	32	
30 75	3,543 34	— 2,082 41	63	25 30	33	
.....	49,494 28	19,939 57	167	13 26	34	
.....	35,825 38	— 27,359 90	57	50 05	35	
.....	12,905 57	2,345 67	122	35 58	36	
355 36	27,947 94	17,770 19	274	177 11	37	
1,734 66	140,626 13	77,544 53	223	384 36	38	
.....	10,168 32	2,641 32	135	55 36	39	
6,826 41	130,982 76	5,167 39	104	98 70	40	
.....	984 82	— 1,153 04	46	15 39	41	
15,241 20	214,609 54	76,266 81	155	94 40	42	
1,854 49	83,946 54	37,012 35	179	189 04	43	
.....	9,964 07	— 2,053 62	83	104 96	44	
6,864 18	305,816 59	49,456 66	119	225 40	45	
4,197 05	148,269 17	28,137 28	123	85 62	46	
.....	4,991 26	— 969 72	84	15 71	47	
9,835 52	290,493 14	— 63,524 85	82	92 44	48	
.....	32,079 58	11,658 89	157	13 72	49	
.....	100,178 50	25,831 81	135	14 71	50	
479 75	44,495 26	6,740 14	118	76 93	51	
314 86	163,321 06	58,137 72	155	94 03	52	
120 97	110,090 23	37,602 19	152	164 31	53	



## No. 6.—SUMMARY STATEMENT of Earnings

Number.	Name of Railway.	Mileage.	Passenger Traffic.	Freight Traffic.	Mails and Express Freight.
			\$ cts.	\$ cts.	\$ cts.
54	New Brunswick and Prince Edward Island.....	36·00	5,388 16	14,338 60	1,929 91
55	Niagara Falls and River Electric Ry.....	13·68	49,701 53		
56	Northern Pacific and Manitoba.....	265·11	72,333 09	218,533 46	8,781 62
57	Nosbousing and Nipissing.....	5·50		58,762 00	
58	Nova Scotia Central (now Centry Ry. of Nova Scotia).....	74 00	22,889 37	20,941 99	2,540 70
59	Nova Scotia Steel Co., formerly New Glasgow Iron Coal and Ry.Co.....	12·50	1,438 70	12,787 96	313 00
60	Orford Mountain.....	26·50	1,332 56	14,037 68	525 84
61	Oshawa Electric Ry.....	8·50	5,380 93	15,403 46	1,299 64
62	Ottawa and Gatineau.....	56·50	24,493 56	24,682 22	3,004 46
63	Ottawa, Arnprior and Parry Sound.....	263·80	81,585 65	386,163 37	10,305 97
64	Philipsburg Ry. and Quarry Co.....	7·50	74 90	244 07	
65	Pontiac Pacific Junction.....	70·60	15,789 38	18,211 53	3,101 52
66	Port Arthur, Duluth and Western.....	85·50	2,738 71	12,130 95	
67	QuAppelle, Long Lake and Saskatchewan.....	253·96	17,872 19	58,470 90	2,667 22
68	Quebec and Lake St. John.....	242·00			
	Great Northern.....	21·00			
	Lower Laurentian.....	35·00			
		298·00	69,845 90	158,269 15	11,922 50
69	Quebec Central.....	213·50	143,333 08	273,197 46	19,446 48
70	Quebec, Montmorency and Charlevoix.....	30·00	41,127 69	11,824 17	1,081 84
71	Red Mountain.....	9·53	15,165 18	29,599 43	893 31
72	Salisbury and Harvey.....	45·00	5,940 09	12,480 89	2,550 41
73	Shore Line of New Brunswick.....	82·50	13,628 16	13,256 09	3,210 56
74	Stanstead, Shefford and Chambly.....	43·00	18,296 00	42,796 39	2,783 94
75	St. Clair Tunnel.....	2·23	* 46,098 00	† 204,720 00	‡ 137 50
76	St. Catharines and Niagara Central.....	12·35	4,015 01	23,307 70	616 23
77	St. Lawrence and Adirondack.....	33·00	60,098 55	61,841 18	2,273 50
78	Sydney and Louisburg.....	65·90	17,053 47	240,806 71	
79	South Shore, formerly Montreal and Sorel.....	44·67	26,237 92	6,969 70	1,886 17
80	Témiscouata.....	113·00	14,639 91	35,641 21	11,393 90
81	Tilsonburg, Lake Erie and Pacific.....	20·00	2,232 25	3,915 87	125 00
82	Thousand Islands.....	4·33	4,164 70	10,588 56	2,115 21
83	Toronto, Hamilton and Buffalo.....	84·62	68,173 37	191,152 18	517 83
84	United Counties.....	61·00	17,163 77	23,508 85	1,165 78
85	Victoria and Sydney.....	16·26	8,991 30	9,271 60	408 89
	Total.....	16,717·64	15,622,311 40	38,508,175 87	2,732,004 34

# Department of Railways and Canals.

for the Year ended 30th June, 1898—*Concluded.*

Other Sources.	Total Gross Earnings.	Total Net Earnings.	Proportion of Earnings to Working Expenses.	Earnings per Train Mile.	Number.	Remarks.
\$ cts.	\$ cts.	\$ cts.	p. c.	Cts.		
.....	21,656 67	6,527 30	143	60·62	54	
1,141 22	50,842 75	19,763 47	164	22·74	55	
16,228 80	315,876 97	7,651 90	98	137·46	56	
.....	58,762 00	10,935 50	123	441·48	57	
897 56	47,269 62	5,982 43	114	94·21	58	
5,400 00	19,939 66	3,063 97	118	128·64	59	
.....	15,866 08	2,343 56	117	51·33	60	
803 96	22,887 99	4,838 85	127	38·31	61	
398 46	52,578 70	5,640 64	112	94·16	62	
1,899 59	479,954 58	111,749 53	130	80·52	63	
1,291 67	1,610 64	33 75	98	160·10	64	
414 38	37,516 81	2,853 65	108	75·78	65	
977 56	15,847 22	723 49	105	92·83	66	
631 71	79,642 02	2,582 78	103	138·75	67	
18,692 54	258,730 09	40,837 37	119	107·32	68	
3,058 60	439,035 62	126,649 21	141	103·50	69	
500 00	54,533 70	16,347 89	143	97·71	70	
143 81	45,801 73	12,104 19	136	176·76	71	
198 10	21,169 49	1,297 54	107	75·14	72	
258 62	30,353 43	3,093 61	111	57·66	73	
955 23	64,531 56	6,404 30	111	84·53	74	
.....	250,955 50	139,524 84	225	.....	75	*Tolls on passenger cars. †Tolls on freight cases. ‡Tolls on new locomotives hauled through tunnel.
1,123 24	29,062 18	1,375 57	105	145·31	76	
.....	124,213 23	41,959 06	151	82·45	77	
78,196 88	336,057 06	166,941 44	199	246·08	78	
2,165 12	37,258 91	7,854 62	127	61·62	79	
.....	61,675 02	2,753 86	105	62·31	80	
.....	6,273 12	779 12	114	33·01	81	
921 75	17,790 22	5,396 88	144	111·32	82	
.....	259,843 38	16,641 70	94	104·31	83	
4,394 53	46,232 93	943 28	98	54·61	84	
.....	18,671 79	3,937 78	127	77·36	85	
2,852,613 91	59,715,105 52	20,577,556 47	.....	.....		

## No. 7.—SUMMARY STATEMENT of Operating

Number.	Name of Railway.	Mileage.	Maintenance of Line, Buildings, &c.	Working and Repairs of Engines.
			\$ cts.	\$ cts.
1	Alberta Railway and Coal Co. ....	64·62	11,516 95	16,779 97
2	Albert Southern..... 16·0 )	19 00	804 45	1,708 15
	Harvey Branch..... 3·00 }			
3	Atlantic and Lake Superior comprising— Baie des Chaleurs, 98 miles.....	98·00	6,373 93	9,488 13
	Great Eastern, 23 miles not under traffic.....			
	Ottawa Valley, 7 " ".....			
4	Bay of Quinté Railway and Navigation Co..... 4·00 )	64·82	18,485 77	29,842 44
	Kingston, Napanee and Western... 60·82 }			
5	Berlin and Waterloo (Electric).....	3·00	86 90	.....
6	Brockville, Westport and Sault Ste Marie.....	45·00	11,499 62	6,012 07
7	Buctouche and Moncton .....	32·00	3,165 27	4,531 08
8	Calgary and Edmonton.....	295·07	65,272 61	48,653 08
9	Canada Atlantic..... 138·00 )	176·00	104,127 35	173,867 08
	Central Counties... 38·00 }			
10	Canada Eastern.....	136·00	22,726 87	35,741 58
11	Canada Southern .....	382·19	597,835 03	762,739 82
12	Canadian Government Railways— Intercolonial.....	1,145·46	861,727 62	1,031,630 81
	Prince Edward Island.....	210·00	94,333 51	56,520 66
13	Canadian Pacific Railway, owned..... 4,283·34 )	6,298·35	3,102,154 66	4,545,371 57
	Leased Lines—			
	Fredericton .....			
	New Brunswick .....			
	New Brunswick and Canada .....			
	St. John and Maine.....			
	St. John Bridge and Railway Extension..			
	St. Stephen and Milltown.....			
	Tobique Valley.....			
	Cap de la Madeline.....			
	Montreal and Lake Maskinongé.....			
	Atlantic and North-west.....			
	Montreal and Ottawa.....			
	Ontario and Quebec.....			
	St. Lawrence and Ottawa.....			
	Credit Valley .....			
	Guelph Junction.....			
	Toronto, Hamilton and Buffalo.....			
	Toronto, Grey and Bruce .....			
	West Ontario Pacific .....			
	Manitoba South-western Colonization....			
	Columbia and Kootenay .....			
	Nakusp and Slocan.....			
	Shuswap and Okanagan.....			
14	Caraquet.....	68·00	13,201 43	9,620 57
15	Carillon and Grenville .....	13·00	1,375 00	2,060 00
16	Central Ontario..... 104·00 )	113·60	35,726 73	20,338 95
	Ontario, Belmont and Northern .....			
17	Central of New Brunswick .....	45·66	7,998 28	3,005 56
18	Coast Railway of Nova Scotia.....	30·80	5,047 07	5,284 96
19	Cumberland Railway and Coal Co.....	32·00	15,901 34	13,945 19
20	Dominion Atlantic— Windsor and Annapolis..... 87·50 )	220·50	133,274 94	160,961 98
	Cornwallis Valley .....			
	Yarmouth and Annapolis .....			
	Windsor Branch, Intercolonial..... 32·00 }			
21	Drummond County.....	133·53	11,748 55	16,204 48
22	Elgin and Havelock .....	27·00	3,191 44	2,737 33
23	Erie and Huron.....	76·75	22,925 01	23,736 14
24	Esquimault and Nanaimo.....	78·00	50,853 96	31,685 67
25	Fredericton and St. Mary's Railway Bridge Co.....	1·33	977 23	.....



# Department of Railways and Canals.

Expenses for the Year ended 30th June, 1898.

Working and Repairs of Cars.	General Operating Expenses.	Total.	Cost of operating per train mile.	Number.	Remarks.
\$ cts.	\$ cts.	\$ cts.	Cents.		
1,713 77	47,410 17	77,420 86	232·73	1	
.....	30 00	2,542 60	58·52	2	
943 80	6,155 81	22,961 67	37·98	3	
8,798 38	27,548 22	84,674 81	66·77	4	
249 57	7,803 98	8,140 45	11·18	5	
865 22	10,585 66	28,962 57	86·76	6	
691 30	5,962 58	14,350 23	69·03	7	
7,242 66	42,039 53	163,207 88	93·21	8	
49,438 80	208,198 11	535,631 34	97·85	9	
4,688 52	23,202 71	86,359 68	42·37	10	
254,220 79	1,432,718 96	3,047,514 60	79·29	11	
467,808 87	896,481 21	3,257,648 51	82·36	12	
18,892 47	61,672 10	231,418 74	93·80		
971,440 93	6,065,823 49	14,684,790 65	82·95	13	
1,999 85	5,831 71	30,653 56	76·32	14	
25 00	20 60	3,480 60	58·99	15	
5,086 41	25,152 87	86,304 96	82·58	16	
1,508 48	8,197 39	20,709 71	64·35	17	
36 79	8,667 93	19,036 75	68·07	18	
4,903 84	15,329 21	50,079 58	81·41	19	
16,168 86	150,066 29	460,472 07	95·51	20	
1,809 21	16,102 12	45,864 36	76·56	21	
.....	2,848 94	8,777 71	52·43	22	
5,872 25	31,959 31	84,492 71	54·33	23	
9,333 70	193,883 84	285,757 17	161·15	24	
.....	757 87	1,735 10	.....	25	

## No. 7.—SUMMARY STATEMENT of Operating

Number.	Name of Railway.	Mileage.	Maintenance of Line, Buildings, &c.	Working and Repairs of Engines.
			\$ cts.	\$ cts.
26	Grand Trunk . . . . .	884·25		
	Great Western . . . . .	561·80		
	Brantford, Norfolk and Port Burwell . . . . .	34·78		
	Buffalo and Lake Huron . . . . .	162·00		
	Grand Trunk, Georgian Bay and Lake Erie . . . . .	172·75		
	Owen Sound Branch . . . . .	12·42		
	London, Huron and Bruce . . . . .	69·01		
	Waterloo Junction . . . . .	10·25		
	South Norfolk . . . . .	17·00		
	Wellington, Grey and Bruce . . . . .	168·13		
	Northern . . . . .	172·10		
	North Simcoe . . . . .	33·34		
	Hamilton and North-western . . . . .	173·90		
	Northern and Pacific Junction . . . . .	111·37		
	Toronto Belt Line . . . . .	12·70		
	Midland . . . . .	166·78		
	Grand Junction . . . . .	85·40		
	Toronto and Nipissing . . . . .	85·00		
	Lake Simcoe Junction . . . . .	26·50		
	Victoria . . . . .	53·25		
	Whitby, Port Perry and Lindsay . . . . .	46·50		
	Jacques Cartier Union . . . . .	6·50		
	Montreal and Champlain Junction . . . . .	61·75		
	Beauharnois Junction . . . . .	19·50		
		3,146·98	2,199,159 45	3,715,957 77
27	Great Northern . . . . .	28·00	1,446 50	2,537 00
28	Great North-west Central . . . . .	50·93	24,116 44	6,723 90
29	Gulf Shore . . . . .	16·78	762 72	406 00
30	Hamilton, Grimsby and Beamsville (Electric) . . . . .	23·00	4,064 00	4,463 00
31	Hamilton and Dundas (Electric) . . . . .	7·25		
32	Hamilton Radial Railway (Electric) . . . . .	11·00	690 00	4,189 28
33	Hampton and St. Martin's, formerly St. Martin's and Upham . . . . .	30·00	1,976 22	893 53
34	Hull Electric . . . . .	13·63	6,287 89	809 05
35	Hereford . . . . .	53·30	26,421 56	17,564 09
36	Irondale, Bancroft and Ottawa . . . . .	50·00	3,715 55	3,814 70
37	Joggins, now Canada Coals and Railway Co. . . . .	12·00	2,509 25	4,771 73
38	Kaslo and Slocan . . . . .	31·80	24,462 64	13,257 46
39	Kent Northern, including St. Louis and Richibucto . . . . .	34·00	1,702 00	2,675 00
40	Kingston and Pembroke . . . . .	112·85	39,701 02	29,613 03
41	L'Assomption . . . . .	3 00	625 12	847 41
42	Lake Erie and Detroit River . . . . .	88·05		
	London and Port Stanley . . . . .	23·75		
		111·80	29,555 64	43,187 43
43	Lake Manitoba Railway and Coal Co. . . . .	123·24	20,363 22	10,197 90
44	Lotbinière and Mégantic . . . . .	30·34	4,475 90	4,232 53
45	Manitoba and North-western . . . . .	234·50		
	Saskatchewan and Western . . . . .	15·47		
		249·97	101,606 40	57,622 12
46	Massawippi Valley . . . . .	36·00	22,849 50	53,407 19
47	Montfort Colonization . . . . .	33·00	570 00	2,518 16
48	Montreal and Atlantic, formerly South-eastern . . . . .	102·70		
	Lake Champlain and St. Lawrence Junction . . . . .	60·70		
		163·40	107,508 99	116,632 52
49	Montreal Island Belt Line . . . . .	12·67	1,653 25	4,358 89
50	Montreal Park and Island (Electric) . . . . .	40·88	7,841 98	30,911 08
51	Montreal, Portland and Boston, now Montreal and Province Line . . . . .	40·60	15,165 88	9,858 79
52	Montreal and Vermont Junction . . . . .	23·60	14,427 85	38,335 93
53	Nelson and Fort Sheppard . . . . .	59·40	27,058 60	17,418 07
54	New Brunswick and Prince Edward Island . . . . .	36·00	6,349 64	5,936 42
55	Niagara Falls Park and River Electric Railway . . . . .	13·68	2,407 75	2,840 06
56	Northern Pacific and Manitoba . . . . .	235·11	130,433 40	76,388 38
57	Nosbonsing and Nipissing . . . . .	5·50	19,320 20	11,933 00
58	Nova Scotia Central, now Central Railway of Nova Scotia . . . . .	74·00	20,031 49	9,178 73

# Department of Railways and Canals.

Expenses for the Year ended 30th June, 1898—*Continued.*

Working and Repairs of Cars.	General Operating Expenses.	Total.	Cost of operating per train mile.	Number.	Remarks.
\$ cts.	\$ cts.	\$ cts.	Cents.		
068,951 14	4,552,639 64	11,536,708 00	72 15	26	
107 00	2,208 60	6,299 10	33 30	27	
1,192 90	16,136 78	48,170 02	299 49	28	
.....	759 49	1,928 21	56 54	29	
2,174 90	11,649 00	22,350 90	9 42	30	
.....	10,768 42	10,768 42	35 89	31	
2,404 92	5,677 98	12,962 18	8 64	32	
182 60	2,573 40	5,625 75	40 18	33	
3,936 06	18,521 71	29,554 71	7 92	34	
5,895 63	13,304 00	63,185 28	88 28	35	
322 25	2,707 40	10,559 90	29 11	36	
847 60	2,049 17	10,177 75	64 49	37	
2,280 13	23,081 37	63,081 60	172 41	38	
150 00	3,000 00	7,527 00	40 98	39	
6,961 00	49,540 32	125,815 37	94 81	40	
171 98	493 35	2,137 86	33 42	41	
10,604 39	54,995 27	138,342 73	60 85	42	
2,691 52	13,699 55	46,934 19	105 69	43	
399 05	2,910 21	12,017 69	126 59	44	
30,828 22	66,303 19	256,359 93	188 95	45	
12,262 29	31,612 91	120,131 89	69 37	46	
834 82	2,038 00	5,960 98	18 77	47	
18,771 32	111,105 16	354,017 99	112 65	48	
977 40	13,431 15	20,420 69	8 73	49	
3,862 02	31,731 61	74,346 69	10 92	50	
2,899 27	9,831 18	37,755 12	65 28	51	
26,490 59	25,928 97	105,183 34	60 56	52	
2,953 18	25,058 19	72,488 04	108 18	53	
298 00	2,545 31	15,129 37	42 35	54	
2,536 97	23,294 50	31,079 28	13 90	55	
19,642 70	97,064 39	323,528 87	140 79	56	
2,680 30	13,893 00	47,826 50	359 32	57	
1,456 54	10,620 43	41,287 19	82 28	58	



## No. 7.—SUMMARY STATEMENT of Operating

Number.	Name of Railway.	Mileage.	Maintenance of Lines, Buildings, &c.	Working and Repairs of Engines.
			\$ cts.	\$ cts.
59	Nova Scotia Steel Co., formerly New Glasgow Iron, Coal and Railway Co. ....	12·50	6,675 62	7,679 09
60	Orford Mountain .....	26·50	3,922 35	6,434 49
61	Oshawa Electric Railway .....	8·50	2,960 04	6,629 03
62	Ottawa and Gatineau .....	56·50	11,966 94	13,380 17
63	Ottawa, Arnprior and Parry Sound .....	263·80	75,615 01	135,462 79
64	Philipsburg Railway and Quarry Co. ....	7·50	360 39	313 32
65	Pontiac Pacific Junction .....	70·60	11,281 08	9,788 95
66	Port Arthur, Duluth and Western .....	85·50	3,685 88	4,491 75
67	Qu'Appelle, Long Lake and Saskatchewan .....	253·96	41,873 74	20,009 90
68	Quebec and Lake St. John .....	242·00	54,491 35	67,982 45
	Great Northern .....	21·00		
	Lower Laurentian .....	35·00		
69	Quebec Central .....	213·50	87,339 90	75,937 27
70	Quebec, Montmorency and Charlevoix .....	30·00	11,207 64	11,210 88
71	Red Mountain .....	9·53	14,859 03	8,643 23
72	Salisbury and Harvey .....	45·00	8,900 40	5,783 72
73	Shore Line of New Brunswick .....	82·50	8,370 15	6,928 14
74	Stanstead, Shefford and Chambly .....	43·00	24,023 33	15,116 14
75	St. Clair Tunnel .....	2·23	9,475 74	61,292 82
76	St. Catharines and Niagara Central .....	12·35	4,715 21	6,992 31
77	St. Lawrence and Adirondack .....	33·00	14,498 74	26,983 46
78	Sydney and Louisbourg .....	65·90	26,911 36	35,179 30
79	South Shore, formerly Montreal and Sorel .....	44·67	7,318 69	9,195 12
80	Témiscouata .....	113·00	21,030 31	16,847 92
81	Tilsonburg, Lake Erie and Pacific .....	20·00	1,300 00	2,200 00
82	Thousand Islands .....	4·33	2,104 58	3,668 26
83	Toronto, Hamilton and Buffalo .....	84·62	68,641 26	70,276 93
84	United Counties .....	61·00	11,656 63	16,340 60
85	Victoria and Sydney, B.C. ....	16·26	3,018 98	6,222 16
	Total .....	16,717·64	8,609,795 92	11,966,919 62

Department of Railways and Canals.

Expenses for the Year ended 30th June, 1898—*Concluded.*

Working and Repairs of Cars.	General Operating Expenses.	Total.	Cost of operating per train mile.	Number.	Remarks.
\$ cts.	\$ cts.	\$ cts.	Cents.		
.....	2,520 98	16,875 69	108·87	59	
117 15	3,048 53	13,522 52	43·75	60	
781 60	7,678 47	18,049 14	30·21	61	
3,150 26	18,440 69	46,938 05	84·05	62	
20,392 72	136,734 53	363,205 06	61·77	63	
12 92	957 76	1,644 39	163·45	64	
1,583 00	12,010 13	34,663 16	70·02	65	
466 74	6,479 36	15,123 73	88·59	66	
2,156 04	13,019 56	77,059 24	134·25	67	
•					
15,794 43	79,624 49	217,892 72	90·38	68	
23,641 47	125,467 77	312,386 41	73·64	69	
4,960 79	10,806 50	38,185 81	68·42	70	
574 01	9,621 27	33,697 54	130·05	71	
943 86	4,243 97	19,871 95	70·54	72	
2,178 40	9,783 13	27,259 82	51·78	73	
3,515 44	15,772 35	58,427 26	76·18	74	
817 08	39,845 02	111,430 66	.....	75	
873 12	15,105 97	27,686 61	138·43	76	
933 66	39,838 31	82,254 17	54·59	77	
17,552 09	89,472 87	169,115 62	123·84	78	
305 19	12,585 29	29,404 29	48·63	79	
4,249 06	16,793 87	58,921 16	59·53	80	
.....	1,994 00	5,494 00	28·91	81	
605 41	6,015 09	12,393 34	77·55	82	
18,643 81	118,923 08	276,485 08	110·99	83	
1,897 07	17,281 91	47,176 21	55·73	84	
98 97	5,393 90	14,734 01	61·04	85	
3,195,750 45	15,365,083 06	39,137,549 05	.....		

No. 8.—SUMMARY OF ACCIDENTS for the

Number.	Name of Railway.	Mileage.	Passengers, Employees or Others.	Fell from Cars or Engines.		Jumping on or off Trains or Engines when in motion.	
				Killed.	Injured.	Killed.	Injured.
1	Alberta Railway and Coal Company.....	64·62					
2	Albert Southern.. 16·0 }	19·00					
	Harvey Branch... 3·0 }						
3	Atlantic and Lake Superior, comprising—						
	Baie des Chaleurs..... 98 miles.	98·00	Employee				
	Great Eastern ..... 23 miles not under traffic.						
	Ottawa Valley... 7 "						
4	Bay of Quinté Railway and Navigation Company. 4·06 }	64·82	Employee				
	Kingston, Napanee and Western... 60·82 }						
5	Berlin and Waterloo (Electric).....	3·00					
6	Brockville, Westport and Sault Ste. Marie.....	45·00					
7	Buctouche and Moncton .....	32·00	Others.		1		
8	Calgary and Edmonton .....	295·07	Employees.				
9	Canada Atlantic... 138·00 }	176·00	{ Passengers..	1	1		
	Central Counties... 38·00 }		{ Employees ..	1		1	
10	Canada Eastern .....	136·00	Employee			1	
11	Canada Southern- ...	382·19	{ Passengers..		1		3
	Sarnia, Chatham and Erie.....		{ Employees..	1	9		
	Leamington and St. Clair.....		{ Others.....				4
12	Canadian Government Railways—						
	Intercolonial .....	1,145·46	{ Passengers..		1		1
			{ Employees..	1	4	1	6
			{ Others.....	2		1	2
	Prince Edward Island .....	210·00	{ Passengers..				1
			{ Employees..				
			{ Passengers..		5		3
13	Canadian Pacific Railway.....	6,298·35	{ Employees..	6	34	2	13
			{ *Others....	4	2	6	12
14	Caraquet.....	68·00					
15	Carillon and Grenville.....	13·00					
16	Central Ontario..... 104·00 }	113·60	Others.			1	
	Ontario, Belmont and Northern... 9·60 }						
17	Central of New Brunswick.....	45·66					
18	Coast Railway of Nova Scotia.....	30·80					
19	Cumberland Railway and Coal Company, including						
	Spring Hill and Oxford Branch, 14 miles	32·00					
20	Dominion Atlantic, comprising—						
	Windsor and Annapolis.. 87·50 }	220·50	{ Employees..				
	Cornwallis Valley..... 14·00 }		{ Others.....				1
	Yarmouth and Annapolis.. 87·00 }						
	Windsor Branch, Intercolonial... 32·00 }						
21	Drummond County .....	133·53					
22	Elgin and Havelock .....	27·00					
23	Erie and Huron.....	76·75					
24	Esquimalt and Nanaimo..	78·00					
25	Fredericton and St. Mary's Bridge Company.....	1·33					
26	Grand Trunk.....	3,146·98	{ Passengers..	2	4		7
			{ Employees..	8	45		16
			{ Others.....	11	18	2	14
27	Great Northern.....	28·00					
28	Great North-west Central .....	50·93					
29	Gulf Shore .....	16·78					
30	Hamilton, Grimsby and Beamsville (Electric).....	23·00					
31	Hamilton and Dundas.....	7·25					
32	Hamilton Radial (Electric). .....	11·00	Others.				
33	Hampton and St. Martin's.....	30·00					
34	Hull Electric Railway .....	13·63	{ Passengers..		1		
			{ Employees..	1			
			{ Others.....				

\* Others, 14 killed and 17 injured at Highway Crossings.  
56



Department of Railways and Canals.

Year ended 30th June, 1898.

At work on or near Track making up Trains.		Putting Arms or Heads out of Wind'ws		Coupling Cars.		Collisions, or by Trains thrown from Track.		Walking, standing, lying or being on Track.		Ex- plosions.		Striking Bridges.		Other Causes.		Totals.		Number.
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	
																		1
																		2
					1												1	3
	2				1												3	4
																		5
																	1	6
					1	1	1								1	1	3	7
																1	1	8
				1	5										2	3	7	9
					1											1	1	10
	2				8		1							1	19	1	4	11
						8	2									8	39	6
																	2	
2	2			1	19	5	11		2				1	1	10	11	55	12
								10	5						2	13	9	
					1		2								3		1	
							7								5		6	
				5	144	10	20	5	6				10	7	117	35	20	13
						2	2	23	8					16	21	51	344	45
																		14
																		15
																1		16
																		17
																		18
																		19
								2	1								1	20
																2	2	
																		21
																		22
																		23
																		24
																		25
			1				12							1	5	3	29	
3	25			3	115	4	13	6	14				4	7	57	31	289	26
	1				3	3	8	42	12					19	28	77	84	
																		27
																		28
																		29
																		30
								1										31
																1		32
																	1	33
																1		34
								2	1							2	1	

## No. 8.—SUMMARY OF ACCIDENTS for the

Number.	Name of Railway.	Mileage.	Passengers, Employees or Others.	Fell from Cars or Engines.		Jumping on or off Trains or Engines when in motion.	
				Killed.	Injured.	Killed.	Injured.
35	Hereford Railway.....	53·30	Employees....		2		
36	Irondale, Bancroft and Ottawa.....	50·00					
37	Joggins, now Canada Coal and Railway Company.....	12·00					
38	Kaslo and Slocan.....	31·80					
39	Kent Northern, including St. Louis and Richibucto....	34·00					
40	Kingston and Pembroke.....	112·85					
41	L'Assomption.....	3·00					
42	Lake Erie and Detroit River..... 88·05	111·80	{ Employees.....		1		
	London and Port Stanley..... 23·75 }		{ Others.....				
43	Lake Manitoba Railway and Canal Company.....	123·24					
44	Lotbinière and Mégantic.....	30·34	Others.....				
45	Manitoba and North-western..... 234·50	249·97	{ Employees.....				
	Saskatchewan and Western..... 15·47 }		{ Others.....		1		
46	Massawippi Valley.....	36·00	{ Passengers.....				
47	Montfort Colonization.....	33·00	{ Employees.....				
48	Montreal and Atlantic, formerly South Eastern 102·70	163·40	{ Passengers.....				1
	Lake Champlain and St. Lawrence Junction 60·70 }		{ Employees.....		3		
49	Montreal Island Belt Line (Electric).....	12·67	{ Others.....			1	1
50	Montreal Park and Island (Electric).....	40·88	Employees.....				
51	Montreal and Province line, formerly Montreal, Port- land and Boston.....	40·60	Passengers.....		1		
52	Montreal and Vermont Junction.....	23·60	Others.....				
53	Nelson and Fort Sheppard.....	59·40	{ Employees.....				
54	New Brunswick and Prince Edward Island.....	36·00	{ Others.....				
55	Niagara Falls Park and River Railway (Electric).....	13·68	Others.....				
56	Northern Pacific and Manitoba.....	265·11	Passengers.....				
57	Nosbonsing and Nipissing.....	5·50	{ Passengers.....		1		
58	Nova Scotia Central.....	74·00	{ Employees.....		2		
59	Nova Scotia Steel Company, formerly New Glasgow Iron, Coal and Railway Company.....	12·50	{ Others.....				
60	Orford Mountain.....	26·50					
61	Oshawa Electric Railway.....	8·50					
62	Ottawa and Gatineau.....	56·50					
63	Ottawa and Parry Sound.....	263·80	{ Employees.....				
64	Philipsburgh Railway and Quarry Company.....	7·50	{ Others.....				
65	Pontiac Pacific Junction.....	70·60					
66	Port Arthur, Duluth and Western.....	85·50					
67	Qu'Appelle, Long Lake and Saskatchewan.....	253·96	Employee.....				
68	Quebec and Lake St. John..... 242·00	298·00	{ Employees.....		1		
	Great Northern..... 21·00		{ Others.....				
	Lower Laurentian..... 35·00 }						
69	Quebec Central.....	213·50	Others.....				
70	Quebec, Montmorency and Charlevoix.....	30·00	Employees.....				1
71	Red Mountain.....	9·53					
72	Salisbury and Harvey.....	45·00					
73	Shore Line.....	82·50	Employees.....				
74	Stanstead, Shefford and Chambly.....	43·00	".....				
75	St. Clair Tunnel.....	2·23	".....				
76	St. Catharines and Niagara Central.....	12·35					
77	St. Lawrence and Adirondack.....	33·00					
78	Sydney and Louisbourg.....	65·90	Employees.....				
79	South Shore, formerly Montreal and Sorel.....	44·67					
80	Témiscouata.....	113·00	Employees.....		1		
81	Tilsonburg, Lake Erie and Pacific.....	20·00					

# Department of Railways and Canals.

Year ended 30th June, 1898—*Continued.*

At work on or near Track making up Trains.		Putting Arms or Heads out of Wind'ws		Coupling Cars.		Collisions, or by Trains thrown from Track.		Walking, standing, lying or being on Track.		Ex-plosions.		Striking Bridges.		Other Causes.		Totals.		Number.
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	
																	2	35
																		36
																		37
																		38
																		39
																		40
																		41
									1								1	42
																	1	43
														1		1		44
					2									1			3	45
															1			46
					1		1		1								3	47
																	1	48
					5										7		15	49
									1							1	2	50
									1								2	51
						1	3									1	3	52
								2								2		53
								1	1							1	1	54
							6										6	55
	4													1	17	1	23	56
															2		2	57
																		58
																		59
																		60
																		61
																		62
					2	1	3	1			1				6	2	12	63
								1	1						3	1	4	64
																		65
																		66
					1												1	67
																		68
					3	1	1									1	5	69
								1								1		70
								2								2		71
																		72
				1												1		73
																		74
														3	3	3	3	75
																		76
																		77
																	1	78
					1													79
																1		80
																		81



No. 8.—SUMMARY OF ACCIDENTS for the

Number.	Name of Railway.	Mileage.	Passengers, Employees or Others.	Fell from Cars or Engines.		Jumping on or off Trains or Engines when in motion.	
				Killed.	Injured.	Killed.	Injured.
82	Thousand Islands.....	4 33					
83	Toronto, Hamilton and Buffalo.....	84 62	{ Passengers.. Employees.. Others.....	1	2		1 4
84	United Counties.....	61 00					
85	Victoria and Sydney, B.C.....	16 26	Others.....				
		16,717 64		40	139	17	91

Department of Railways and Canals.

Year ended 30th June, 1898—*Concluded.*

At work on or near Track making up Trains.		Putting Arms or Heads out of Wind'ws		Coupling Cars.		Collisions, or by Trains thrown from Track.		Walking, standing, lying or being on Track.		Ex-plosions.		Striking Bridges.		Other Causes.		Totals.		Number.
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	
																		82
					18			1	1						14	2	39	83
								2	2							2	2	
								1							1	1	1	84
5	36	....	1	11	332	37	95	103	59	...	1	.	15	57	328	270	1,097	85

No. 9.—Lines of Railway owned by Coal and Iron Mines, for the Year ended 30th June, 1898.

Name.	Length of Rail way.	Gauge.	No. of Engines.	No. of Wagons.	Remarks.
	Miles.	Miles.			
NOVA SCOTIA.					
Acadia Coal Mining Co.....	3·0	4·8½	2	20	Known as the Albion Mines Railway. Connecting Dominion Colliery with Intercolonial Railway at Westville and Granton Wharf, at Middle River, Port of Pictou, N.S
Intercolonial Coal Mining Co.....	8·00	4·8½	2	221	
Londonderry Iron Co..... {	9·50	4·8½	2	17	
	3·00	3·00	2	21	
	23·50		8	279	
CAPE BRETON.					
General Mining Association of London England—					This railway is used for colliery purposes only. It conveys the coal from the Old Sydney Mines to the Port of North Sydney and is connected with the Intercolonial Railway at North Sydney by a short branch line.
Sydney Mines .....	5·15	4·8½	4	212	
Dominion Coal Co—					
Sydney and Louisbourg Rilway Main Line.	39·15	4·8½	19	760	
Branches—Main Line to Bridge port Colliery.....	·50	4·8½	....	....	
Main Line to Reserve....	2·12	4·8½	....	....	
"    International .....	·25	4·8½	....	....	
"    Hub Colliery .....	2·00	4·8½	....	....	
"    to Glace Bay .....					
"    Glace Bay Colliery.....	·50	4·8½	....	....	
"    Caledonia....	1·11	4·8½	....	....	
"    Gowrie.....	1·50	4·8½	....	....	
Victoria Colliery to Victoria Pier....	5·06	4·8½	....	....	
Sterling Pit to Glace Bay Harbour...	·50	4·8½	....	....	
Caledonia Colliery " " .....	1·75	4·8½	....	....	
Gowrie Colliery to Gowrie Pier.....	1·75	4·8½	....	....	
Reserve Mine to Sydney. . . . .	10·13	3·6	....	....	
Main Line to Dominion No. 1 Colliery	1·60	3·0	....	....	
	73·07		23	972*	

\* The Dominion Coal Co. own the Sydney and Louisburg Railway for which there was also returned 610 coal cars.



No. 10 —STATEMENT of Aid granted to Railways—Constructed and under Construction—by Governments, for the year ended 30th June, 1898.

Department of Railways and Canals.

Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
DOMINION (GOVERNMENT.						
Albert (now Salisbury and Harvey).....	* 29,665 45					
Albert Southern .....			50,460 00			
Atlantic and North west in Canada.....			<i>a</i> 1,422,000 00			
Baie des Chaleurs.....			620,000 00			
Belleville and North Hastings—Grand Junction (now in Grand Trunk).....			21,888 00			
Beauharnois Junction.....			62,400 00			
Brantford, Waterloo and Lake Erie (now Toronto, Hamilton and Buffalo).....			57,600 00			
Brockville, Westport and Saut Ste. Marie.....			165,200 00			
Buctouche and Moncton.....			101,600 00			
Canada Atlantic .....			282,355 20			
Canada Central.....			1,525,250 00			
Canada Eastern (formerly Northern and Western of New Brunswick.).....			<i>b</i> 366,839 84			
Canadian Pacific.....			<i>c</i> 56,094,579 94			
" .....			80,000 00			
" .....			3,630,000 00			
Revelstoke to Arrow Lake.....			7,424 00			
Crows Ness Pass Railway.....						
Cap de la Madeleine.....			224,000 00			
Caraquet.....			<i>d</i> 185,100 00			
Central of New Brunswick.....			<i>†</i> 83,612 54			
Hampton and St. Martin (formerly St. Martin and Upham).....			<i>†</i> 195,200 00			
Coast Railway of Nova Scotia.....			<i>d</i> 160,000 00			
Cobourg, Northumberland and Pacific.....			<i>d</i> 88,800 00			
Colombia and Kootenay.....			44,800 00			
Cornwallis Valley (now in Dominion Atlantic).....			39,850 00			
Cumberland Railway and Coal Company.....			<i>d</i> 208,000 00			
Dominion Eastern.....			<i>d</i> 433,920 00			
Dominion County .....			15,360 00			
Dominion Lime Company (now in Hereford Ry).....			<i>d</i> 76,800 00			
East Richelieu Valley.....			<i>d</i> 82,652 82			
Elgin and Havelock.....			96,000 00			
Erie and Huron.....			750,000 00			
Esquimalt and Nanaimo.....			30,000 00			
Fredericton and St. Mary's Railway and Bridge Company.....	300,000 00					
Grand Trunk.....	15,142,633 33					

\* \$14,665.45 rails. † Including \$83,612.54 rails to St. Martin's and Upham Ry. *a* Payable in half-yearly instalments of \$35,550 each for 20 years, commencing 1st July, 1889. *b* Including \$24,439.84, rails to Chatham Branch. *c* Including cost of railway lines built by Dominion Government, and transferred to Canadian Pacific Railway Company; \$31,094,579.94. *d* Including \$44,252,82 rails.

No. 10.—STATEMENT of Aid Granted to Railways by Governments—*Continued.*

Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
DOMINION GOVERNMENT—Continued.						
Victoria Bridge of Grand Trunk Ry.			300,000 00			
Grand Trunk, Georgian Bay and Lake Erie, Owen Sound Branch.			39,744 00			
Great Eastern.			40,345 00			
Great Northern (exclusive of Ottawa Valley Section).			4 495,988 00			
Guelph Junction.			46,000 00			
Gulf Shore.			4 56,000 00			
Harvey Branch.			5,553 57			
Hereford.			155,200 00			
Intercolonial.			55,668,913 95			
International (Atlantic and North-west) C.P.R.			156,800 00			
Iroquois, Bancroft and Ottawa.			160,000 00			
Joggins (now Canada Coals and Railway Co.).			37,500 00			
Kent Northern.	+ 58,334 27					
Kingston, Nananee and Western, now Bay of Quinté.			208,732 80			
Kingston and Pembroke.			48,000 00			
Kingston, Smith's Falls and Ottawa.			4 323,200 00			
L'Assomption.			11,200 00			
Lake Erie and Detroit River.			338,731 00			
Lake Temiscamingue Colonization.			310,335 95			
Leamington and St. Clair (now in Canada Southern).			51,200 00			
Lotbinière and Mégantic.			96,000 00			
Lower Laurentian.			217,600 00			
Midland of Nova Scotia (formerly Stewiacke Valley and Lansdowne).			300,000 00			
Montfort Colonization.			171,600 00			
Montreal and Lake Maskinongé.			41,280 00			
Montreal and Champlain Junction.			103,600 00			
Montreal and Ottawa.			192,000 00			
Montreal and Sorel (now South Shore).			93,757 57			
Montreal and Western.			361,270 00			
Nakusp and Slocan.			121,600 00			
Napierville Junction.			38,400 00			
New Brunswick and Prince Edward Island.			113,440 00			
New Glasgow Iron and Coal Co. (now Nova Scotia Steel Co.).			39,840 00			
Northern and Pacific Junction.			1,320,000 00			
Nova Scotia Central (now Central of Nova Scotia).			230,700 00			
Nova Scotia Southern.			240,000 00			
Ontario, Belmont and Northern.			32,000 00			

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Ontario and Quebec.....	196,000 00
Orford Mountain.....	84,800 00
Oshawa (Electric).....	22,400 00
Ottawa, Arnprior and Parry Sound.....	A 757,632 00
Ottawa and Gatineau.....	A 320,000 00
Ottawa and New York.....	A 172,384 00
Ottawa Valley (formerly part of Great Northern) now in Atlantic and Lake Superior.....	21,600 00
Parry Sound Colonization.....	152,800 00
Philipsburg Railway and Quarry Co.....	A 23,712 00
Pontiac Pacific Junction.....	A 307,850 00
Pontiac and Renfrew.....	13,600 00
Port Arthur, Duluth and Western.....	271,200 00
Prince Edward Island.....	3,768,107 26
Quebec and Lake St. John.....	1,006,743 50
Quebec Central.....	348,342 00
Quebec, Montmorency and Charlevoix.....	96,000 00
Quebec, Montreal, Ottawa and Occidental, North Shore, Montreal to Quebec.....	+954,000 00
" " Montreal to Ottawa.....	1,500,000 00
St. Catharines and Niagara Central.....	+1,440,000 00
St. Louis and Richibucto.....	38,400 00
St. John Bridge and Railway Extension.....	22,400 00
St. John Valley and Rivière du Loup (subsidy lapsed).....	A 149,481 60
St. Lawrence and Adirondack.....	375,000 00
St. Clair Tunnel.....	A 14,848 00
St. Stephen and Milltown.....	163,200 00
Shuswap and Okanagan.....	54,400 00
South Norfolk.....	87,808 00
Sydney and Louisbourg—Dominion Coal Co.....	645,950 00
Temiscouata.....	24,400 00
Thousand Islands.....	A 62,400 00
Tilsonburg, Lake Erie and Pacific.....	134,016 00
Tobique Valley.....	14,656 00
Toronto, Grey and Bruce.....	A 208,000 00
United Counties.....	32,800 00
Waterloo Junction.....	60,000 00
Western Ontario Pacific.....	500,000 00
Western Counties (now in Dominion Atlantic).....	1,193,369 00
Windsor and Amnapolis (now in Dominion Atlantic).....	112,500 00
Interprovincial Bridge—Ottawa.....	15,964,533 05
	144,659,023 54

+ Dominion Government pays to Quebec Government 5 per cent interest per annum on these two amounts.

A See note on page No. 18.

+ Rail's, 58,334.27.

a. Payable in half-yearly instalments of \$35,550 each for 20 years, commencing 1st July, 1899.



No. 10.—STATEMENT of Aid granted to Railways by Governments—Continued.

Name of Railway.	Loan.		Total.		Bonus.		Total.		Subscription to Shares or Bonds.		Total.	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
ONTARIO GOVERNMENT.												
Brantford, Norfolk and Port Burwell, in Grand Trunk												
Canada Atlantic							68,000	00				
Canada Central							270,000	00				
Canada Southern							1,479,000	00				
Central Ontario							147,858	65				
Cobourg, Blairton and Marmora							126,500	00				
Credit Valley							18,740	00				
Erie and Huron							531,000	00				
Grand Junction and Belleville and North Hastings							83,000	00				
Grand Trunk, Georgian Bay and Lake Erie..							224,660	00				
Hamilton and North-western							336,000	00				
Irondale, Bancroft and Ottawa							565,020	00				
Kingston and Pembroke							165,000	00				
Kingston, Napanee and Western (now in Bay of Quinté)							456,493	00				
London, Huron and Bruce							90,000	00				
Midland							178,630	00				
Montreal and Ottawa							168,350	00				
Northern							100,000	00				
North Simcoe							196,188	00				
Ontario, Belmont and Northern							83,300	00				
Ottawa, Arnprior and Parry Sound							19,149	39				
Parry Sound Colonization							431,000	00				
Port Arthur, Duluth and Western							148,500	00				
Tilsonburg, Lake Erie and Pacific							261,000	00				
Toronto and Nipissing							32,000	00				
Lake Simcoe Junction							105,212	00				
Toronto, Grey and Bruce							53,000	00				
Victoria							375,282	00				
Wellington, Grey and Bruce							312,000	00				
Whitby, Port Perry and Lindsay							241,276	00				
Interprovincial Bridge at Ottawa							94,957	59				
							50,000	00				
											7,411,116	63
QUEBEC GOVERNMENT.												
Baie des Chaleurs (now in Atlantic and Lake Superior)											988,546	00
Beauharnois Junction											179,073	00

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Canada Atlantic.....	192,000 00
Great Eastern (now in Atlantic and Lake Superior).....	156,000 00
Great Northern.....	499,485 00
Drummond County.....	347,420 54
East Richelieu Valley.....	116,392 50
Hereford.....	103,000 00
International (now Atlantic and North-west—C.P.R.).....	391,122 02
Lake Champlain and St. Lawrence Junction.....	250,280 00
Lake Témiscamingue Colonization Railway.....	350,076 82
L'Assomption.....	7,350 00
Lotbinière and Mégantic.....	126,994 00
Lower Laurentian.....	252,000 00
Missisquoi Valley (now Atlantic and North-west—C.P.R.).....	228,000 00
Montfort Colonization.....	169,895 80
Montreal and Champlain Junction.....	150,000 00
Montreal and Ottawa.....	182,210 00
Montreal, Portland and Boston (now Montreal and Province Line).....	231,122 00
Montreal and Sorel (now South Shore).....	276,645 00
Montreal and Western.....	472,500 00
Montreal and Lake Maskinonge.....	87,750 00
Orford Mountain.....	154,000 00
Ottawa and Gatineau.....	780,770 00
Ottawa Valley (now in Atlantic and Lake Superior).....	25,390 00
Philipsburg Ry. and Quarry Co.....	25,667 00
Pontiac Pacific Junction.....	536,000 00
Pontiac and Renfrew.....	17,433 60
Quebec and Lake St. John.....	2,533,000 00
Quebec Central.....	1,076,123 14
Quebec, Montreal, Ottawa and Occidental, including North Shore.....	727,000 00
Quebec, Montmorency and Charlevoix.....	292,000 00
South-eastern (now Montreal and Atlantic).....	444,000 00
St. Lawrence and Adirondack.....	65,216 00
Temiscouata.....	241,500 00
United Counties.....	210,000 00
Waterloo and Magog (now in Atlantic and North-west C.P.R.).....	92,000 00
	3,722,956 00
	12,977,962 42
NEW BRUNSWICK GOVERNMENT.	
Albert (now Salisbury and Harvey).....	455,000 00
Albert Southern.....	48,680 00
Buctouche and Moncton.....	96,000 00
Caraquet.....	180,000 00
Central of New Brunswick.....	139,000 00
Chatham Branch (now part of Canada Eastern).....	56,000 00
Fredericton.....	230,000 00
Grand Southern (now Shore Line).....	413,000 00
Gulf Shore.....	35,000 00
Harvey Branch.....	9,000 00





Department of Railways and Canals.

BRITISH COLUMBIA GOVERNMENT.					
Canadian Pacific	.....	.....	.....	37,500 00	37,500 00
Total aid granted by Governments.....			21,569,423 32	172,336,987 33	300,000 00

No. 10.—STATEMENT of Aid granted to Railways—Constructed and under Construction—by Municipalities, 30th June, 1898.

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
		\$ cts.	\$ cts.	\$ cts.	\$ c.	\$ cts.	\$ cts.
ONTARIO.							
Deseronto .....	Bay of Quinté Ry. & Navigation Co.						
Town of Brockville .....	Brockville, Westport and Sault Ste. Marie .....				5,000 00		
Elizabethtown .....	do .....			36,000 00			
Rear of Yonge and Escott .....	do .....			7,000 00			
do Leeds and Lansdowne .....	do .....			15,600 00			
Bastard and Burgess .....	do .....			5,000 00			
South Crosby .....	do .....			28,000 00			
Village of Newboro' .....	do .....			6,000 00			
North Crosby .....	do .....			4,000 00			
	do .....			15,000 00			
Various municipalities .....					116,000 00		
Renfrew .....	Buffalo and Lake Huron .....				966,000 00	30,000 00	
Horton .....	Canada Central, now Can. Pacific .....					7,500 00	
Admaston .....	do .....					5,000 00	42,500 00
County of Elgin .....	Canada Southern .....			200,000 00			
Township of Townsend .....	do .....			30,000 00			
do Durham .....	do .....			15,000 00			
do Anderson .....	do .....			15,000 00			
Town of St Thomas .....	do .....			25,000 00			
Township of Malden .....	do .....			15,000 00			
Town of Amherstburg .....	do .....			15,000 00			
South Norwich .....	do .....			7,500 00			
					322,500 00		
Sault Ste. Marie .....	Canadian Pacific .....			20,000 00			
Carleton Place .....	do .....			20,000 00			
Owen Sound .....	do .....			40,000 00			
Northumberland and Durham .....							
West Hawkesbury .....	Cobourg, Blairton and Marmora .....			15,000 00			
Vankleek Hill .....	Central Counties .....			1,200 00			
Dalkeith .....	do .....			800 00			
Rockland .....	do .....			6,000 00			
Clarence .....	do .....			1,000 00			
Town of Trenton .....	Central Ontario .....			10,000 00			
Wellington Village .....	do .....			2,500 00			

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Town of Picton.....	Central Ontario.....	21,000 00	93,500 00
County of Prince Edward.....	do.....	60,000 00	
Town of Cobourg.....	Cobourg, Northumberland & Pacific.....	30,000 00	
Village of Campbellford.....	do.....	15,000 00	
Township of Percy.....	do.....	25,000 00	93,500 00
do Haldimand.....	do.....	14,000 00	
do Brighton.....	do.....	2,000 00	
do Hamilton.....	do.....	4,500 00	
do Cramahe.....	do.....	3,000 00	93,500 00
County of Oxford.....	Credit Valley.....	200,000 00	
do Wellington.....	do.....	135,000 00	
do Waterloo.....	do.....	110,000 00	
do Peel.....	do.....	75,000 00	1,085,000 00
do Halton.....	do.....	70,000 00	
City of Toronto.....	do.....	350,000 00	
do St. Thomas.....	do.....	50,000 00	
Town of Milton.....	do.....	30,000 00	257,500 00
do Brampton.....	do.....	20,000 00	
do Ingersoll.....	do.....	10,000 00	
do Orangeville.....	do.....	15,000 00	
Village of Streetsville.....	do.....	20,000 00	1,085,000 00
County of Kent.....	Erie and Huron.....	155,000 00	
City of Chatham.....	do.....	30,000 00	
Town of Sarnia.....	do.....	16,000 00	
Village of Dresden.....	do.....	20,500 00	257,500 00
do Blenheim.....	do.....	11,000 00	
do Wallaceburg.....	do.....	11,000 00	
Township of Sombra.....	do.....	14,000 00	
do Woodhouse.....	Grand Trunk, Georgian Bay and Lake Erie.....	15,000 00	257,500 00
Town of Simcoe.....	do.....	10,000 00	
Township of South Norwich.....	do.....	10,000 00	
do North.....	do.....	40,000 00	
Town of Woodstock.....	do.....	25,000 00	257,500 00
Township of East Oxford.....	do.....	25,000 00	
do Woodstock.....	do.....	60,000 00	
Town of Woodstock.....	do.....	120,000 00	
do Stratford.....	do.....	40,600 00	257,500 00
County of Perth.....	do.....	10,000 00	
Township of Mornington.....	do.....	15,000 00	
do Elma.....	do.....	10,000 00	
Town of Listowel.....	do.....	30,000 00	257,500 00
Township of Wallace.....	do.....	25,000 00	
Town of Palmerston.....	do.....	20,000 00	
Township of Minto.....	do.....	80,000 00	
Town of Harriston.....	do.....		
Township of Normanby.....	do.....		



No. 10.—STATEMENT of Aid granted to Railways by Municipalities.—Continued.

Municipalities.	Name of Railway.	Loan.		Total.		Bonus.		Total.	Subscription to Shares or Bonds.		Total.
		\$	cts.	\$	cts.	\$	cts.	\$	\$	cts.	cts.
ONTARIO—Continued.											
Township of Bentinck.....	Grand Trunk, Georgian Bay and Lake Erie.....										
do Brant.....	do do.....					65,000 00					
do Elderslie.....	do do.....					20,000 00					
do Arran.....	do do.....					45,000 00					
do Amabel.....	do do.....					45,000 00					
do Keppel.....	do do.....					43,000 00					
do Albemarle.....	do do.....					32,000 00					
Town of Mount Forest.....	do do.....					10,000 00					
Township of Egremont.....	do do.....					22,000 00					
Township of Glenelg.....	do do.....					60,000 00					
Town of Durham.....	do do.....					20,000 00					
						32,000 00		929,000 00			
Town of Owen Sound.....	Grand Trunk, Owen Sound Branch.					75,000 00					
Township of Sarawak.....	do do.....					7,500 00					
do Keppel.....	do do.....					3,000 00		85,500 00			
City of Belleville.....	Grand Junction.....					150,000 00					
Village of Sterling.....	do do.....					5,000 00					
Township of Rawdon.....	do do.....					15,000 00					
do Seymour.....	do do.....					35,000 00					
do Percy.....	do do.....					8,000 00			50,000 00		
do Asphodel.....	do do.....										
City of Guelph.....	Guelph Junction.....							213,000 00			50,000 00
County of Frontenac.....	Kingston and Pembroke.....					170,000 00					193,000 00
City of Kingston.....	do do.....					318,000 00					
Village of Renfrew.....	do do.....					3,000 00					
City of Kingston and other Municipalities.....	Kingston, Smith's Falls and Ottawa							491,000 00			
Town of Napanee.....	Kingston, Napanee and Western.....					30,000 00		361,500 00			
Village of Newburgh.....	do do.....					7,500 00					
Township of Camden.....	do do.....					30,000 00					
do Sheffield.....	do do.....					15,000 00					
do Loughborough.....	do do.....					5,000 00					
City of Kingston.....	do do.....					75,000 00		162,500 00			

Department of Railways and Canals.

City of Hamilton.....	Hamilton and North-western .....	.....	99,733 00
Village of Georgetown.....	Hamilton and North-western .....	.....	11,289 00
County of Peel.....	do do .....	.....	30,974 00
do Simcoe.....	do do .....	.....	354,007 00
Town of Collingwood.....	do do .....	.....	12,084 00
Township of Innisfil.....	do do .....	.....	22,592 00
do Woodhouse.....	do do .....	.....	20,740 00
do do Adjala.....	do do .....	.....	2,500 00
do do Essa.....	do do .....	.....	2,500 00
do do Tossoronto.....	do do .....	.....	10,000 00
do do Mulmur.....	do do .....	.....	5,000 00
Village of Alliston.....	do do .....	.....	8,000 00
Township of Nottawasaga.....	do do .....	.....	20,386 00
City of Hamilton .....	Hamilton, Grimsby and Beamsville.	.....	599,805 00
Township of Saltfleet.....	do .....	.....	25,000 00
Town of Dundas.....	Hamilton and Dundas.....	.....	3,000 00
Township of South Colchester.....	Lake Erie and Detroit River.....	.....	20,000 00
do Garfield.....	do do .....	.....	15,000 00
Village of Kingsville.....	do do .....	.....	10,000 00
Township of Romney.....	do do .....	.....	10,000 00
Township of East Tilbury.....	do do .....	.....	5,000 00
do Raleigh.....	do do .....	.....	10,000 00
Village of Blenheim.....	do do .....	.....	5,000 00
do Ridgetown.....	do do .....	.....	12,500 00
Township of East Gwillimbury.....	Lake Simcoe Junction.....	.....	87,500 00
do North do .....	do do .....	.....	45,000 00
do Georgina.....	do do .....	.....	20,000 00
do Whitchurch.....	do do .....	.....	20,000 00
Village of Leamington .....	Leamington and St. Clair, in Can-	.....	15,000 00
ada Southern .....	do .....	.....	12,000 00
Township of Mersea .....	do .....	.....	15,000 00
Village of Comber.....	do .....	.....	6,000 00
Township of London .....	London, Huron and Bruce.....	.....	15,000 00
do Stephen.....	do do .....	.....	17,500 00
do Osborne.....	do do .....	.....	25,000 00
do Hay.....	do do .....	.....	15,000 00
do Goderich.....	do do .....	.....	15,000 00
do E. Wawanosh.....	do do .....	.....	25,000 00
do Hallet.....	do do .....	.....	25,000 00
do Tuckersmith.....	do do .....	.....	10,000 00
do Turnberry.....	do do .....	.....	5,000 00
do Morris.....	do do .....	.....	10,000 00
do Stanley.....	do do .....	.....	10,000 00
Village of Clinton.....	do do .....	.....	20,000 00
do Exeter.....	do do .....	.....	10,000 00

No. 10.—STATEMENT of Aid granted to Railways by Municipalities—Continued.

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
ONTARIO Continued.							
do Kincardine.	London, Huron and Bruce.			9,000 00			
do Wigan.							
City of London.	do			100,000 00	311,500 00		
Municipalities.	London and Port Stanley.		680,311 00				
County of Elgin.						80,000 00	
do Middlesex.						100,000 00	
City of London.						200,000 00	
City and Town of St. Thomas.						34,000 00	414,000 00
Township of Thorah.	Midland			50,000 00			
Town of Port Hope.	do			30,000 00			
Townships of Orillia and Matchedash.	do			12,500 00			
Town of Orillia.	do			12,500 00			
Township of Tay.	do			21,370 85			
Village of Omamee.	do			2,000 00			
Township of Mara.	do			12,500 00			
Town of Peterborough.	do			4,000 00	144,870 85		
City of Toronto.	Northern			100,000 00		190,000 00	
County of Simcoe.	do					260,000 00	
Town of Barrie.	do			30,000 00			
do Orillia.	do			12,500 00			
Townships of Collingwood, Euphrasia and Saint Vincent.	do			99,480 00	241,980 00		390,000 00
Town of Smith's Falls.	Ontario and Québec.			25,000 00			
do Merrickville.				10,000 00			
Township of West Winchester.				15,000 00			
do Thamesford.	do			2,500 00	52,500 00		
Town of Oshawa.	Oshawa.				5,000 00		
City of Ottawa.	Ottawa, Arnprior and Parry Sound.			150,000 00			
Township of Huntley.	do			4,392 00			
do Hagarty.	do					2,000 00	
Town of Arnprior.	do				154,392 00		32,000 00



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Town of Port Arthur.....	Port Arthur, Duluth and Western.	.....	25,000 00	
Municipality of Neebing.....	do	.....	15,000 00	
Township of Russell.....	Ottawa and New York	.....	40,000 00	
		.....	10,000 00	
Town of Simcoe.....	South Norfolk.....	.....	5,000 00	
Township of Charlotteville.....	do	.....	20,000 00	
do South Walsingham.....	do	.....	40,000 00	
City of St. Catharines.....	St. Catharines and Niagara Central.	40,000 00	.....	80,000 00
Town of Thorold.....	do	.....	40,000 00	20,000 00
City of Ottawa.....	St. Lawrence and Ottawa.....	200,000 00	.....	60,000 00
Town of Prescott.....	do	100,000 00	.....	30,000 00
do Gananoque.....	Thousand Islands.....	.....	.....	
Township of Bayham.....	Tilsonburg, Lake Erie and Pacific.	.....	35,000 00	
Township of Malahide.....	do	.....	4,000 00	
do Houghton.....	do	.....	3,000 00	
Town of Tilsonburg.....	do	.....	10,000 00	
Village of Vienna.....	do	.....	3,000 00	
City of Toronto.....	Toronto and Nipissing.....	.....	150,000 00	
Township of Scarborough.....	do	.....	10,000 00	
do Markham.....	do	.....	30,000 00	
do Uxbridge.....	do	.....	50,000 00	
do Scott.....	do	.....	10,000 00	
do Brock.....	do	.....	50,000 00	
do Eldon.....	do	.....	44,000 00	
do Bexley.....	do	.....	15,000 00	
do Somerville.....	do	.....	15,000 00	
Townships of Luxton, Digby and Langford.....	do	.....	12,500 00	
Town of Uxbridge.....	do	.....	2,000 00	
		.....		*376,702 59
Township of Albion.....	Toronto, Grey and Bruce.....	.....	40,000 00	
do Caledon.....	do	.....	45,000 00	
do Mono.....	do	.....	45,000 00	
do Amaranth.....	do	.....	30,000 00	
do Arthur.....	do	.....	35,000 00	
Town of Orangeville.....	do	.....	15,000 00	
do Mount Forest.....	do	.....	20,000 00	
City of Toronto.....	do	.....	350,000 00	
County of Grey (Group).....	do	.....	300,000 00	
Town of Owen Sound.....	do	.....	5,000 00	
Township of Minto.....	do	.....	15,000 00	
do Howick.....	do	.....	35,000 00	
do Gorrie and Wroster....	do	.....	5,000 00	
Village of Teeswater.....	do	.....	5,000 00	

100,000 00  
90,000 00

\* Amount returned as realised, balance as lapsed, see return of 1875.

No. 10.—STATEMENT of Aid granted to Railways by Municipalities—Continued.

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscriptions to shares or Bonds	Total.
		\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
ONTARIO—Continued.							
Township of Culross.....	Toronto, Grey and Bruce.....	.....	.....	38,000 00	.....	.....	.....
do Turnbury.....	do .....	.....	.....	5,000 00	.....	.....	.....
City of Brantford.....	Toronto, Hamilton and Buffalo, comprising Brantford, Waterloo and Lake Erie.....	.....	.....	.....	988,000 00	.....	.....
	do .....	.....	.....	25,000 00	.....	.....	.....
Township of Oakland.....	do .....	.....	.....	9,000 00	.....	.....	.....
do Waterford.....	do .....	.....	.....	2,500 00	.....	.....	.....
City of Hamilton.....	do .....	.....	.....	225,000 00	.....	.....	.....
Township of South Grimsby.....	do .....	.....	.....	4,000 00	.....	.....	.....
	Victoria .....	.....	.....	85,000 00	265,500 00	.....	.....
Town of Lindsay.....	do .....	.....	.....	25,000 00	.....	.....	.....
Village of Fenelon Falls.....	do .....	.....	.....	22,000 00	.....	.....	.....
Township of Verulam and Somerville.....	do .....	.....	.....	54,000 00	.....	.....	.....
County of Haliburton.....	Waterloo Junction.....	.....	.....	28,000 00	186,000 00	.....	.....
	do .....	.....	.....	7,000 00	.....	.....	.....
Township of Woolwich.....	do .....	.....	.....	10,000 00	.....	.....	.....
Section of Peel.....	do .....	.....	.....	2,000 00	.....	.....	.....
Village of Elmira.....	Wellington, Grey and Bruce.....	.....	.....	10,000 00	47,000 00	.....	.....
do St. Jacobs.....	do .....	.....	.....	40,000 00	.....	.....	.....
	do .....	.....	.....	10,000 00	.....	.....	.....
Fergus.....	do .....	.....	.....	40,000 00	.....	.....	.....
Peel.....	do .....	.....	.....	10,000 00	.....	.....	.....
Elora.....	do .....	.....	.....	40,000 00	.....	.....	.....
Maryboro'.....	do .....	.....	.....	10,000 00	.....	.....	.....
Nichol.....	do .....	.....	.....	35,000 00	.....	.....	.....
Wallace.....	do .....	.....	.....	65,000 00	.....	.....	.....
Minto.....	do .....	.....	.....	278,000 00	.....	.....	.....
Bruce.....	do .....	.....	.....	20,000 00	.....	.....	.....
Howick.....	do .....	.....	.....	15,000 00	.....	.....	.....
Listowel.....	do .....	.....	.....	35,000 00	.....	.....	.....
Grey.....	do .....	.....	.....	30,000 00	.....	.....	.....
Elma.....	do .....	.....	.....	30,000 00	.....	.....	.....
Morris.....	do .....	.....	.....	18,000 00	.....	.....	.....
W. Wawanosh.....	do .....	.....	.....	10,000 00	.....	.....	.....
Ashfield.....	do .....	.....	.....	28,000 00	.....	.....	.....
Turnbury.....	do .....	.....	.....	8,000 00	.....	.....	.....
Kincardine.....	do .....	.....	.....	.....	682,000 00	.....	.....
	do .....	.....	.....	.....	25,000 00	.....	.....
City of London.....	West Ontario Pacific.....	.....	.....	.....	.....	.....	.....

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Town of Whitby.....	Whitby, Port Perry and Lindsay.....	70,000 00	222,094 93	1,311,500 00
Township of Whitby.....	do do	15,000 00		
Township of Reach.....	do do	30,000 00		
do Seugog.....	do do	2,000 00		
County of Victoria.....	do do	85,000 00		
Village of Port Perry.....	do do	20,000 00	10,233,845 37	1,311,500 00
Manufacturing Co ..	do do	94 93		
QUEBEC				
Caplin.....	Baie des Chaleurs.....	5,000 00	40,500 00	20,000 00
New Richmond.....	do	6,000 00		
Maria.....	do	6,000 00		
Carleton.....	do	6,000 00		
Nouvelle and Shoolbred.....	do	6,000 00		
New Carlisle.....	do	6,000 00		
Paspébiac.....	do	3,000 00		
Hamilton.....	do	2,500 00		
Farnham.....	Canadian Pacific.....	10,000 00		
Town of Nicolet.....	Drummond County.....	5,000 00		
Municipality of St. Leonard.....	do		15,000 00	
Sabrevois.....	East Richelieu Valley.....	2,000 00	6,500 00	
Henryville.....	do	4,500 00		
Parish of St. Antoine.....	Great Eastern.....	10,000 00	20,000 00	
do Saint Denis.....	do	10,000 00		
Parish of St. Sophie.....	Great Northern.....	4,000 00	6,000 00	
Village of New Glasgow.....	do	2,000 00		
County of Compton.....	International, now in Atlantic and North-west, C.P.R.....			
St. Pie.....	Lake Champlain & St. Lawrence J.....	20,000 00		
L'Ange Gardien.....	do do	10,000 00		
St. Paul.....	do do	6,000 00	51,000 00	
Philipsburg.....	do do	15,000 00		
Town of L'Assomption.....	L'Assomption.....			
City of Three Rivers.....	Lower Laurentian.....		1,500 00	
Ascot.....	Massawippi Valley.....			
Hatley.....	do			
Township of Melbourne and Bromp- ton Gore.....	Missisquoi & Black Riv. Valley, now in Atlantic & North-west, C.P.R.....			
Township of Ffly.....	do do			
do North Stukely.....	do do			
do Bolton.....	do do			
				85,000 00



No. 10.—STATEMENT of Aid granted to Railways by Municipalities—*Continued.*

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscrip- tions to Shares or Bonds.	Total.
		\$	cts.	%	cts.	\$	cts.
<i>QUEBEC—Concluded.</i>							
Ormstown.....	Montreal & Champlain Junction— (Grand Trunk.....						
St. Constant.....	do					10,000 00	
Ste. Philomène.....	do					1,800 00	
Laprairie.....	do					2,820 00	
Huntingdon.....	do					1,904 00	
St. Isidore.....	do					3,000 00	
Dewittsville.....	do					1,500 00	
						750 00	
						21,774 00	
Municipality of Rigaud.....	Montreal and Ottawa.....					2,000 00	
Parish of Rigaud.....	do					800 00	
Point Fortune.....	do					2,500 00	
						5,300 00	
Chamblay Canton.....	Montreal, Portland and Boston.....					15,000 00	
do Basin.....	do					10,000 00	
						25,000 00	
Village of Napierville.....	Napierville Junction.....					5,000 00	
Parish of Napierville.....	do					5,000 00	
do St. Edouard.....	do					2,500 00	
						12,500 00	
County of Pontiac.....	Pontiac Pacific Junction.....					100,000 00	
Village of Shawville.....	do					1,000 00	
						101,000 00	
Village of St. Andrews.....	Ottawa Valley.....					50,000 00	
Parish of Sherbrooke.....	Quebec Central.....					25,000 00	
do Dudswell.....	do					25,000 00	
do Weedon.....	do					3,000 00	
Township of Garthby.....	do					103,000 00	
						450,000 00	
						12,000 00	
						450,000 00	
City of Quebec.....	Quebec and Lake St. John.....						
Town of Chicoutimi.....	do						
City of Montreal.....	Quebec, Montreal, Ottawa and Oc- cidental.....						
do Quebec.....	do	1,000,000 00					
do Three Rivers.....	do	1,000,000 00					
County of Ottawa.....	do	100,000 00					
St. Sauveur de Québec.....	do	200,000 00					
Côte St. Louis.....	do	25,000 00					
		25,000 00					

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Village of Ste. Thérèse .....	do	do	12,000 00	25,000 00	25,000 00	50,000 00
Parish of .....	do	do	12,000 00			50,000 00
do St. Jérôme.....	do	do	10,000 00			63,000 00
Village .....	do	do	15,000 00			25,000 00
Ste. Scholastique .....	do	do	10,000 00			20,000 00
St. Andrews .....	do	do	25,000 00			5,000 00
St. Jérusalem d'Argenteuil .....	do	do				5,000 00
County of Brome.....	South-eastern (now Montreal and Atlantic)		2,434,000 00			30,000 00
Township of Brome .....	do	do				15,000 00
do Sutton.....	do	do				10,000 00
do Potton.....	do	do				15,000 00
do Farnham.....	do	do				40,000 00
Village of West Farnham.....	do	do				15,000 00
do East .....	do	do				20,000 00
do Waterloo.....	do	do				50,000 00
do Drummondville.....	do	do				10,000 00
County of Drummond.....	do	do				10,000 00
Township of Wickham.....	do	do				15,000 00
do St. Germain.....	do	do				40,000 00
Township of Sorel.....	do	do				15,000 00
Village of Actonvale.....	do	do				15,000 00
do Roxton Falls.....	do	do				20,000 00
Township of Roxton .....	do	do				50,000 00
do Sheffield.....	do	do				10,000 00
do West Wickham .....	do	do				
City of Sorel.....	South Shore, formerly Mont. & Sorel			25,000 00	25,000 00	528,000 00
Fraserville.....	Témiscouata.....					
Municipality of Magog.....	Waterloo and Magog, now Atlantic and North-west, C.P.R.					15,000 00
			2,434,000 00			15,000 00
				526,074 00		1,393,000 00
NEW BRUNSWICK.						
Hillsboro', Hopewell and Harvey Parishes.....	Albert, now Salisbury and Harvey.			40,000 00		
Coverdale, Hillsboro', Hopewell and Harvey Parishes.....	do			30,000 00		
City of St. John.....	Canadian Pacific.....					
City of Fredericton.....	Fredericton.....			50,000 00		
County of York .....	do			30,000 00		
Parish of St. George.....	Grand Southern, now Shore Line ..					
do Pennfield.....	do					
Leppent.....	do					
			3,000 00			

No. 10.—STATEMENT of Aid granted to Railways by Municipalities—Concluded.

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
		\$	cts.	\$	cts.	\$	cts.
NEW BRUNSWICK—Concluded.							
Town of Fort Fairfield	New Brunswick			12,000 00			
do Lyndon.	do			11,000 00			23,000 00
City of Calais	New Brunswick and Canada			12,500 00			
do Houlton	do			22,000 00			
do St. Stephen	do			13,000 00			
Town of Chatham	Northern and Western of New Brunswick, now Canada Eastern.		20,000 00				47,500 00
Parish of Elgin	Elgin, Petitcodiac and Havelock						
City of St. John	St. John and Maine.						13,000 00
			23,000 00				60,000 00
NOVA SCOTIA.							
County of King	Cornwallis Valley, now in Dominion Atlantic						
Counties of Yarmouth, Digby and Annapolis.	Western Counties, new Dominion Atlantic.						27,685 00
Town of Truro	Midland of N.S., formerly Stewiacke Valley and Lansdowne						150,000 00
County of Pictou	New Glasgow Iron, Coal and Railway Co.						30,000 00
do Shelburne	Nova Scotia Southern			50,000 00			4,000 00
do Queen's	do			25,000 00			
do Lunenburg	do			5,000 00			
							80,000 00
							291,685 00
MANITOKA.							
City of Winnipeg	Canadian Pacific			200,000 00			
County of Selkirk	do			35,000 00			
Township of St. Andrews	do			35,000 00			
Town of Morris	do			100,000 00			
							370,000 00



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County of Westborne.....	Manitoba and North-western.....	75,000 00	
Town of Portage la Prairie .....	do .....	50,000 00	
do Minnedosa .. ..	do .....	30,000 00	
Municipality of Shoal Lake.....	do .....	20,000 00	
do Birtle.....	do .....	40,000 00	
do Strathclair .....	do .....	600 00	215,600 00
Rapid City.....	Saskatchewan and Western.....		10,000 00
BRITISH COLUMBIA			595,600 00
City of New Westminster. ....	Canadian Pacific.....		37,500 00

No. 10.—STATEMENT of Aid Granted to Railways Constructed and under Construction by Governments and Municipalities,  
30th June, 1898.

	Loan.		Total.		Bonus.		Total.		Subscription Shares or Bonds.		Total.		Grand Total.	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
<i>Governments.</i>														
Dominion	15,964,533	05			144,659,023	54					160,623,556	59		
Ontario	26,000	00			7,411,116	63					7,437,116	63		
Quebec	3,722,956	00			12,977,962	42					16,700,918	42		
New Brunswick					4,200,590	71			300,000	00	4,500,590	71		
Nova Scotia					2,280,116	53					2,280,116	53		
Manitoba	1,855,934	27			770,677	50					2,626,611	77		
British Columbia			21,569,423	32	37,500	00					37,500	00		
							172,336,987	33		300,000	00		194,206,410	65
<i>Municipalities.</i>														
Ontario	1,020,311	00			10,233,845	37			1,311,500	00	12,565,656	37		
Quebec	2,434,000	00			526,074	00			1,393,000	00	4,353,074	00		
New Brunswick	23,000	00			273,500	00			60,000	00	356,500	00		
Nova Scotia					291,685	00					291,685	00		
Manitoba					595,600	00					595,600	00		
British Columbia					37,500	00					37,500	00		
North-west Territories			3,477,311	00			11,958,204	37			2,764,500	00	18,200,015	37
					25,046,734	32		184,295,191	70		3,064,500	00	212,406,426	02

I N D E X.





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Gov. Doc.  
Can  
P

DEPARTMENT OF PUBLIC WORKS

ANNUAL REPORT FOR 1897-98

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- S. Ship Channel, River St. Lawrence between Montreal and Quebec, November, 1897—Scale : 1 inch =  $4\frac{1}{2}$  miles.
- W. Part of Lake Winnipeg and Red River, in connection with improvements for navigation purposes—Scale 1 inch = 6 miles.

SPECIAL APPENDIX, "A"

- I. "Denison hydrograph" put up on Queen's Wharf, Toronto harbour, in the spring of 1898—1\10 full size.
- II. Interesting undulations on Lake Ontario, recorded by the "Denison hydrograph" in May, 1898.

SPECIAL APPENDIX, "B."

- I. "Tachéomètre Sanguet" (auto-réducteur) as adapted to Geodetic Levelling in connection with a new geodetic rod, by R. Steckel, Eng., in charge Canadian Geodetic Levelling.
- II. New geodetic rod with accessories, for use in connection with the Sanguet tacheometer,—1\10 full size.
- III. Details of new tacheometer rod and accessories— $\frac{1}{2}$  full size.
- 46, 47, 48, 49 and 50. Five typical double pages of proposed field book for tacheometric surveying and précision levelling combined, showing sights, readings, entries and computations required.
- 5 and 6. Two typical double pages of tacheometer field book, showing sights, readings, entries and computations required for geodetic levelling.

OTTAWA

GOVERNMENT PRINTING BUREAU

1899

# PUBLIC WORKS, CANADA.

ILL. I.

HON. J. I. TARTE      MINISTER OF PUBLIC WORKS  
A. GOBEIL      DEPUTY MINISTER  
LOUIS COSTE      CHIEF ENGINEER

## TORONTO HARBOUR

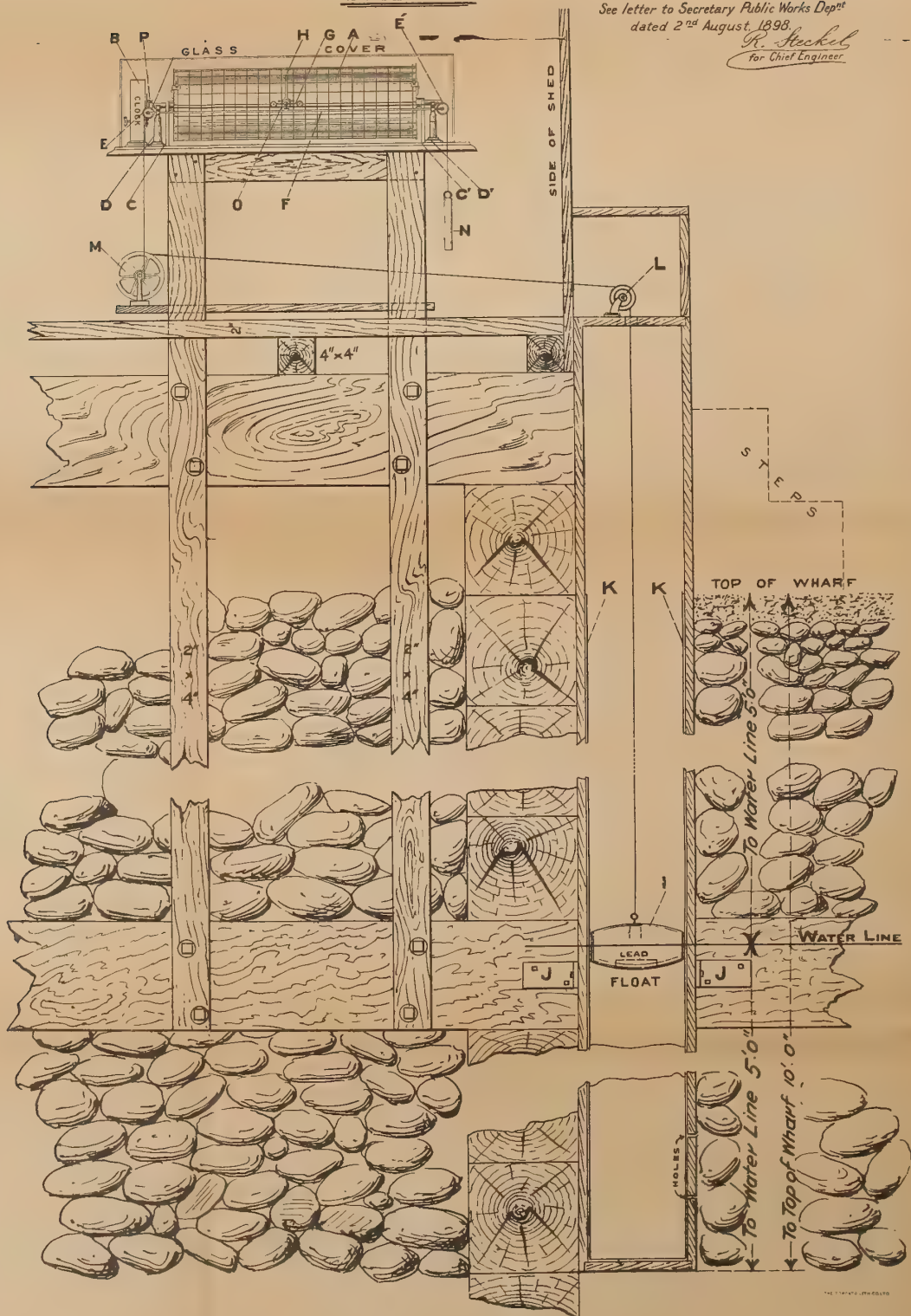
### DENISON HYDROGRAPH PUT UP ON QUEEN'S WHARF

IN THE SPRING OF 1898

$\frac{1}{16}$  FULL SIZE

See letter to Secretary Public Works Dept.  
dated 2<sup>nd</sup> August 1898.

*R. Seckel*  
for Chief Engineer



# Report, Minister of Public Works, Canada, 1897-98.

## SPECIAL APPENDIX "A."

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### ILL. I.

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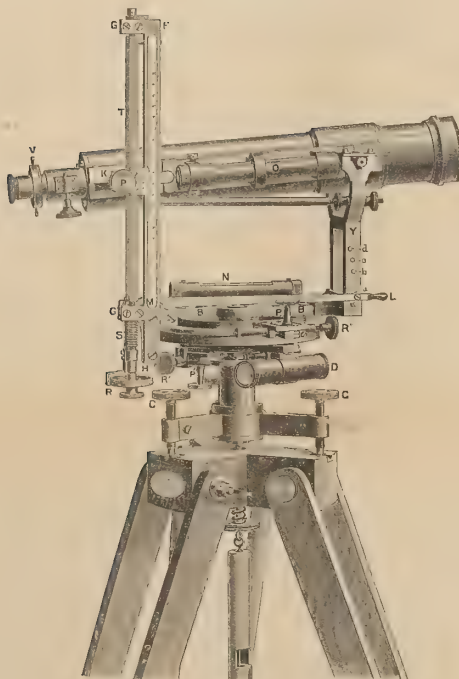
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Vol. 33, no. 8, 1899

1899  
1899-1900



HON. J. I. TARTE, MINISTER OF PUBLIC WORKS  
A. COBEIL, DEPUTY MINISTER.  
LOUIS COSTE, CHIEF ENGINEER.



**TACHÉOMÈTRE SANGUET**  
(AUTO-RÉDUCTEUR.)  
ADAPTED TO GEODETIC LEVELLING  
IN CONNECTION WITH  
A NEW GEODESIC ROD.

See Memorandum,  
transmitted to Public Works Department,  
30th July, 1893.

*R. Siebel*  
Eng. in charge, Can. Geo. Levelling.

902.50.  
Cm  
7

Canada. Parliament  
Sessional paper 9  
Vol. 33, no. 3, 1899

Report, Minister of Public Works, Canada, 1897-98.

SPECIAL APPENDIX "B."

ILL. I "B."

# PUBLIC WORKS, CANADA.

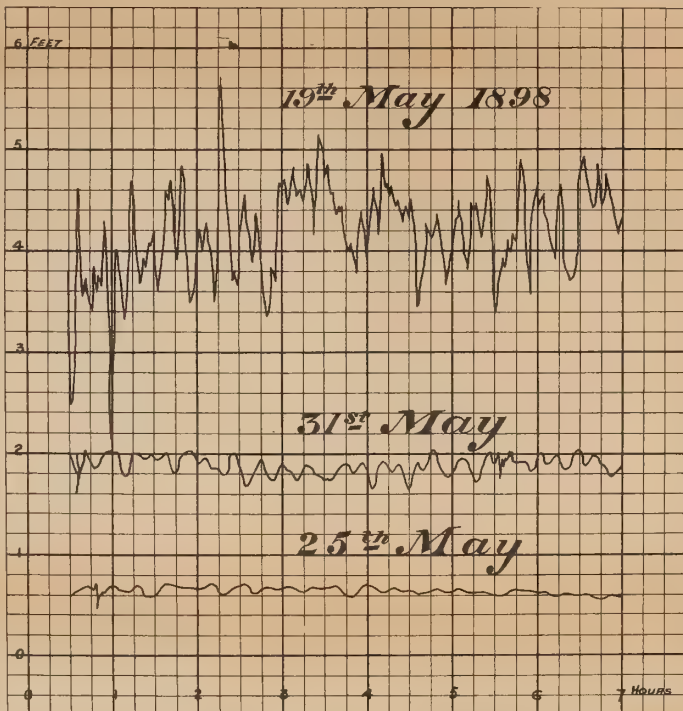
ILL. II

HON. J. I. TARTE ..... MINISTER OF PUBLIC WORKS  
A. GOBEL ..... DEPUTY MINISTER  
LOUIS COSTÉ ..... CHIEF ENGINEER

## TORONTO HARBOUR

INTERESTING UNDULATIONS ON  
LAKE ONTARIO  
REGISTERED BY THE DENISON HYDROGRAPH  
AT THE QUEEN'S WHARF

See letter to Secretary Public Works  
Dep't dated 2<sup>nd</sup> August, 1898.  
*A. Nickel*  
for Chief Engineer





# Report, Minister of Public Works, Canada, 1897-98.

## SPECIAL APPENDIX "A."

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### ILL. II.

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Canadian Parliament  
Sessional Paper 9

Vol 33, no 8 1897

# PUBLIC WORKS, CANADA.

11. I. II.

HON. J. I. TARTE

MINISTER OF PUBLIC WORKS

A. GOBEIL

DEPUTY MINISTER

LOUIS COSTE

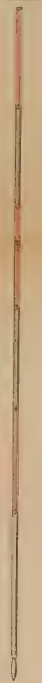
CHIEF ENGINEER

FIG. 1



ROD AS PUT UP  
FOR SHORT DISTANCE  
TRANSPORTATION

FIG. 2



POLE STRUT  
OF STEEL TUBING

FIG. 3



POLE STRUT  
WITH PRUNING KNIFE

FIG. 4



FRONT ELEVATION

FIG. 5



REAR ELEVATION

FIG. 6



SIDE ELEVATION



FIG. 7

PLAN OF ROD BOX  
THROWN OPEN

Set of three rods and accessories  
as packed in box for long distance  
transportation



FIG. 8  
CROSS SECTION  
OF ROD BOX AT A.B.



STATION MARK  
STEEL TUBE  
FIG. 9

## GEODETIC LEVELLING

### NEW GEODESIC ROD AND ACCESSORIES

TO BE USED IN CONNECTION WITH THE

SELF REDUCING SANGUET TACHEOMETER

AS ADAPTED TO PRECISION LEVELLING

$\frac{1}{10}$  FULL SIZE

*R. Sieckel*  
See Memo transmitted July 1898  
to Public Works Department

# Report, Minister of Public Works, Canada, 1897-98.

## SPECIAL APPENDIX "B."

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### ILL. II.

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Canada, Parliament  
Sessional paper 9  
Vol. 33 - 8, 1897



# PUBLIC WORKS, CANADA.

HON. J. I. TARTE      MINISTER OF PUBLIC WORKS  
A. GOBEIL      DEPUTY MINISTER  
LOUIS COSTE      CHIEF ENGINEER

## NEW GEODESIC ROD AND ACCESSORIES

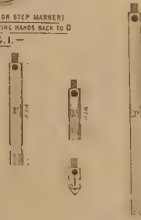
TO BE USED IN CONNECTION WITH THE  
SELF REDUCING SANCUET TACHEOMETER  
AS ADAPTED TO PRECISION LEVELLING

DETAILS 1/2 FULL SIZE

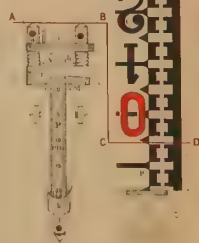
*P. Sanchet*  
Engineer in Charge, Can. Geo. Levelling  
Service, transmitted 30th July 1908 to  
Public Works Department



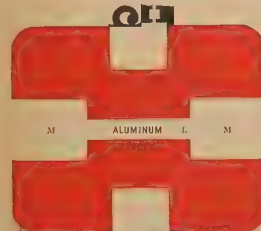
PASSOMETER (OR STEP MARKER)  
WITH BUTTON FOR SETTING HANDS BACK TO 0  
— FIG. 1. —



BRASS LENGTHENING RODS  
— FIG. 3. —



PART FRONT ELEVATION  
— FIG. 4. —

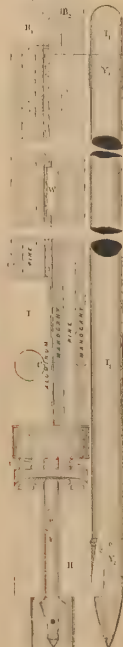


PART FRONT ELEVATION  
SHOWING TARGET IN PLACE  
— FIG. 6. —

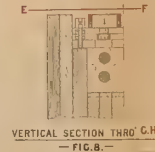
REAR ELEVATION OF TARGET  
— FIG. 5. —



LEATHER PAD



PART SIDE ELEVATION  
WITH STRUTS & TARGET IN PLACE  
— FIG. 7. —



VERTICAL SECTION THRO' C.H.  
— FIG. 8. —



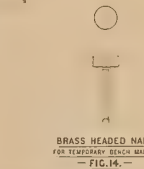
PART SIDE ELEVATION  
WITH STRUTS & TARGET REMOVED  
— FIG. 9. —



SECTIONAL PLAN AT E.F.  
— FIG. 11. —

SECTIONAL PLAN AT A B C D  
— FIG. 12. —

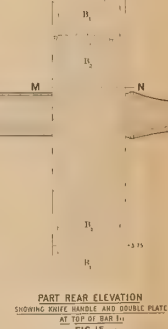
PART REAR ELEVATION  
SHOWING LEVEL CHAMBER  
— FIG. 10. —



BRASS HEADED NAIL  
FOR TEMPORARY BENCH MARKS  
— FIG. 14. —



PLUMB BOB  
WITH LONG CORD FOR ADJUSTING  
CIRCULAR LEVEL  
— FIG. 13. —

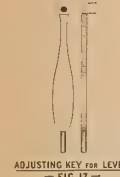


PART REAR ELEVATION  
SHOWING KNIFE HANDLE AND DOUBLE PLATE  
AT TOP OF BAR L.V.  
— FIG. 15. —

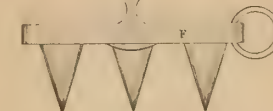
SECTIONAL PLAN AT M.N.  
— FIG. 16. —



TEMPORARY CLOSING PIN  
— FIG. 18. —



ADJUSTING KEY FOR LEVELS  
— FIG. 17. —



ELEVATION OF FOOT PLATE  
— FIG. 19. —



UPPER SIDE OF FOOT PLATE  
— FIG. 20. —

SECTION AT B L.  
— FIG. 21. —

UNDER SIDE OF FOOT PLATE  
— FIG. 22. —

BEVELLED STEEL STRAIGHT EDGE  
WITH HAND LEVEL  
FOR MEASURING HEIGHTS OF BENCH MARKS  
ON WALLS ETC ABOVE 0 OF ROD  
— FIG. 23. —

# Report, Minister of Public Works, Canada, 1897-98.

## SPECIAL APPENDIX "B."

---

### **ILL. III.**

---

Section 24... Along post road, south shore of St. Lawrence... From River Ouelle to. Frasnville... 5

Wednesday 5<sup>th</sup> September 1894 7 Chas. Chaloner Observer.

SIGHT. STATION. ROD. POINT.	Rod Readings A, B, C, D, in feet and Scale Readings: a, b, c, and (1), (2), (3), (4) ..... (n) in decimals of (r = 1 foot).		Collimation C. in feet, and Scale intervals in dec. (r = 1 foot) 2 A or 1 B	Rise or Fall $\frac{1}{2}$ to B of rod 1 $\frac{1}{2}$ Elevation of 0, B, Radius R. All in feet.	REMARKS OF VENERABLE A, B, C, Degr. Minutes	NOTES, COMPUTATIONS, Etc.	SKETCHES AND COMPUTATIONS.
Back SIGHT	A 0 539	B 7 324					
From St. 49	A 0 541	C 10 7185					
To Rod G							
At 9				6785			
Fore SIGHT	B 4 876	D 11 905		1226201			
From St. 49	B 4 873	C 8 383					
To Rod E				738756			
At 10				7029			
Fore SIGHT	D 11 826	B 5 324	3	1226703			
From S 49	D 11 830	C 8 574	5				
To Rod E				043912			
At 11				6502			
Back SIGHT	C 9 156	B 6 129	4				
From St. 49	C 9 160	A 0 081	6				
To Rod G							
At 8				6052			

Elevation E. of 0 of rod E  
on temporary closing p.  
at point 11.29 = 11.72201  
- 346  
12.26201

12.26201 703  
- 4.87450 679  
7.38751 24  
5 2  
7.38756 - 0.000048

11.830  
- 4.876  
6.954

12.26703 650  
11.82800 605  
0.43903 45  
2  
0.43912 + 0.000090

Elevation E. of 0 of rod E  
on temporary closing p.  
at point 8 = 3.10903  
- 9158  
12.26703



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Continued Wednesday 5<sup>th</sup> September 1894

Observer.

SIGHT. STATION. ROD. POINT.	Rod Readings A, B, C, D, in feet and Scale Readings: g, h, c, d and (1), (2), (3), (4), ..... (n) in decimals of (c = 1 foot).		Rod intervals A in feet, and Scale intervals in dec. (c = 1 foot).	Collimation C. Rise or fall to B of rod, $i_2$ Elevation of O, $E_0$ Radius R. All in feet.	READINGS OF VERNIERS. A, B, C, D.		NOTES, COMPUTATIONS. Etc.	SKETCHES AND COMPUTATIONS.
			± A or ± B		Degrees. Minutes			
<i>Back</i> SIGHT	D 10617	B 0860					<i>N. M.</i> <i>9-15 A.M. 60° E.</i> <i>Refraction small</i>	
From St. 50	D 10612	C 5730						
To Rod <i>E</i>							$\frac{0.43912}{10.61450}$ <u>11.05362</u>	
At 11				9757				
<i>Fore</i> SIGHT	A 1686	B 11310		11 05362			<i>Light N. W. wind, clear</i>	
From St. 50	A 1683	B 11307	(7)				$\frac{976}{262}$ $15 \times 2 = -0.000128$ $\frac{11.05362}{1.68450}$ <u>9.36912</u> 9.36909	
To Rod <i>F</i>				936909				
At 12				9624				
<i>Fore</i> SIGHT	C 8534	D 12827	3	11 04760			$\frac{1.683}{8.531}$ $\frac{6.848}{10.4760}$ <i>Yellow 4.5 ft. above ground</i> $\frac{8.531}{44 \times 2 = -0.000688}$ $\frac{8.53280}{2.51507}$ <u>2.51507</u>	
From St. 50	C 8531	B 4234	(8)					
To Rod <i>F</i>				251501				
At 13				8593				
<i>Back</i> SIGHT	B 3663	C 8181	4				$\frac{10.612}{3.637}$ $\frac{7.38760}{3.66000}$ $\frac{6.955}{6.964}$ $\frac{11.05362}{11.04760}$ <u>22.10122</u> $\div 2 = 11.05061$	
From St. 50	B 3657	D 12687	(6)					
To Rod <i>E</i>								
At 10				9030				

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Section 24 Along Post Road, South shore St. Lawrence.

From River Quelle to Fraseville

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Continued. W. Jones day 5<sup>th</sup> September 1894

Chas Chaloner Observer.

SIGHT. STATION. ROD. POINT.	Rod Readings A, B, C, D, in feet and Scale Readings: a, b, c, d and (1), (2), (3), (4) ... (n) in decimals of (r = 3 feet).	Rod intervals A in feet, and Scale intervals in dec. (r = 3 feet) Σ A or Σ A	Collimation C. Rise or Fall to 0 of rod. Elevation of 0, E <sub>0</sub> Rodion R. All in Feet.	READINGS OF VERIFIERS. A, B, C. Degrees. Minutes	NOTES, COMPUTATIONS. Etc.	SKETCHES AND COMPUTATIONS.
SIGHT From St. 39 To Rod G At St. 48	B 0.000 C 6.962			72 10 87 15 252 25 1/2	8-55 A.M. Fine clear weather. Bar E. of 0. and E. on temporary leveling at point 39 = 11.72201	River St. Lawrence L.W.O.S.T. H.W.O.S.T.
Back SIGHT From St. 49 To Rod E At 9	A { 0.539 0.541 } B 7.326 C 8.3925 D 11.7850	6.785 16.9625	12.26201 6.785 6.785	262 18		
Fore SIGHT From St. 49 To Rod F At 20	B { 4.876 4.873 } C 8.383 D 11.902	3.510 7.029	12.26201 7.029	66 50	11.832 4.876 6.956 12.26201 703 4.8745 673 7.029 24 7.38756 \$ 2.000048	
Fore SIGHT From St. 49 To Rod F At 11	D { 11.826 11.830 } C 8.578	3.252 6.502	12.26703 6.502	65 20	7.38756 651 11.82600 606 0.73703 45 9 2 0.73912 0.000090	
	B 8.000 A 1.192	6.506 16.260	+ 0.43912 6.504			



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## Section 24

Continued Wednesday 5<sup>th</sup> September 1894

Observer.

SIGHT. STATION. ROD. POINT.	Rod Readings A, B, C, D, in feet and Scale Readings: a, b, c, d and (1), (2), (3), (4), ..... (n) in decimals of (r = $\frac{1}{2}$ foot).	Rod intervals A in feet, and Scale intervals in dec. (r = $\frac{1}{2}$ foot)	Collimation C. Rise or fall to 2 <sup>nd</sup> rod Elevation of 0, E <sub>0</sub> Radius R. All in feet.	READINGS OF VERNIERS. A, B, C, O.	NOTES, COMPUTATIONS. Etc.	SKETCHES AND COMPUTATIONS.
Degrees. Minutes						
Backsight	C { 9.156 9.160	D 12.286	3026	12 26703		
From St. 49	C { Margin 28.0 31.0	B 6.133	6053	12 26448		
To Rod H	Targ. L. 17.2	A 0.081	6052	262 42	Elev. E <sub>0</sub> of 0 rod E on the primary leveling pin left at point D = 28.035 2.133.00	28.0 22.0 50.0 28.0 - 24.2 = 0.9 0.0060524 0.0053716 + 9.15 = 9.155447 3.10903 12.264477
At . 8	9.155447		15131	60524	12.26703	
SIGHT	B 0000	C 8.122	8122	243 4		
From St. 49	C 4.000	D 12.124	8124	258 6		
To Rod F				63 10 $\frac{1}{2}$		
At St. (50)			16246	62460		
SIGHT	A 0000	B 10.363	10363			
From St. 49				345 30		
To Rod G						
At 9 $\frac{1}{2}$			10363	10363		
SIGHT	A 0000	B 12.360	12360			
From St. 49				345 5 $\frac{1}{2}$		
To Rod C						
At 9 $\frac{3}{2}$			12360	12360		
Point 9 $\frac{1}{2}$ at H. H.	mark ordinary	springs				
Point 9 $\frac{3}{2}$ at I. W.	mark ordinary spring	tides				



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## Section 24

Continued Wednesday 5<sup>th</sup> September 1894

Chas. Chaloner Observer.

SIGHT. STATION. ROD. POINT.	Rod Readings A, B, C, D, in feet and Scale Readings: a, b, c, d and (1), (11), (21), (31), (41) ..... (at in decimals of 1/10 = 1/100 ft).		Rod Intervals A in feet, and Scale Intervals in dec. (1/10 ft)	Collimation C. Rise or fall to 0 of rod Elevation of 0, E. Radius R. All in feet.	READINGS OF YENNIERS. A, B, O.		NOTES, COMPUTATIONS. Etc.	SKETCHES AND COMPUTATIONS.
			1 A or 1 B		Degrees	Minutes		
SIGHT	B 0000	C 8125	8125	11	63	5	9-15 A.M. Refraction small Temperature 60° F Light N.W. wind	
From St. 50	C 4000	D 12126	8126		78	5 1/2		
To Rod G					243	11		
At St. 49			16251	16251				
Back SIGHT	D 10617	C 5734	4878	1105362			$\begin{array}{r} 0.43912 \\ 10.61450 \\ \hline 11.05362 \end{array}$	
From St. 50	D 10612	B 0865	9757					
To Rod E					245	34 1/2		
At Plate 11	B 12000	A 2243	2257	97568				
			22392				$\begin{array}{r} 976 \\ 962 \\ \hline 14 \end{array} \quad \begin{array}{r} 14 \\ 2 \\ \hline -0.000028 \end{array}$	
Fore SIGHT	A 1686	B 11307	9625	1105362				
From St. 50	B 1683	C 7812	7812					
To Rod F		D 12624	9624	936909	72	18		
At Plate 12			24060	96240			$\begin{array}{r} 11.05362 \\ 1.68450 \\ \hline 9.36912 \\ 3 \\ \hline 9.36909 \end{array}$	
Fore SIGHT	C 8534	D 12827	4296	1104760				
From St. 50	B 8531	B 4234	8533					
To Rod F	B 10000	A 1408	8592	251501	72	42		
At Plate 13			21441	859240			$\begin{array}{r} 1.683 \\ 8.531 \\ \hline 6378 \end{array} \quad \begin{array}{r} 11.04760 \\ 8.53250 \\ \hline 2.51510 \\ 3 \\ \hline 2.51503 \end{array}$	

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## Section 24

Continued Wednesday 5<sup>th</sup> September 1894

Observer.

SIGHT. STATION. ROD. POINT.	Rod Readings A, B, C, D, in feet and Scale Readings: a, b, c, and (1), (2), (3), (4), ..... (n) in decimals of (c = 1 foot).		Rod intervals A and Scale intervals (in dec. (cm) foot) — 2A of 2B —		Collimation C. Line of Fall + i, to 6 of rod. Elevation of 6, E <sub>0</sub> . Radius R. Alt in feet.		RANGE OF VARIABLES. A, B, C.		NOTES, COMPUTATIONS. Etc.	SKETCHES AND COMPUTATIONS.
	Degress.	Minutes								
Back SIGHT From St. 50 To Rod E At R. 10	B 3-663 (3-657)	C 8175	4518	11 07760					$\frac{10.612}{3.657} = \frac{7.38760}{3.66000}$ $\frac{6.955}{11.04760}$ $\frac{11.05362}{11.04760}$ $\frac{22.10122}{2} = 11.05061$	
BRIGHT From St. 50 To Rod G At S. 51	A 0000	B 5863	5863		249	12				
		C 8795	2932		254	10 $\frac{1}{2}$				
		D 11728	5865		69	22				
			4660	5864						
BRIGHT From St. 50 To Rod E At R. 14	A 0000	B 8543	8543	11 00061					$\frac{0.14752}{-0.19925}$ $\frac{-0.10175}{8543}$ $\frac{8543}{-86407939}$	
		(C) 39752		-8690794	155	30 $\frac{1}{2}$				
			8543	8543						
BRIGHT From St. 50 To Rod F At R. 15	(2) 49591	(6) 4937	.00726	11 00081					$\frac{0.50352}{-0.19925}$ $\frac{-0.00427}{7.3384475}$	
		(C) 50213	.00682	7 33845						
		(4) 50352	.00617	5 11218	320	45				
			.01720	1643.3						

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Continued Wednesday 5<sup>th</sup> September 1894

Chas. Chaloner Observer.

SIGHT. STATION. ROD. POINT.	Rod Readings A, B, C, D, in feet and Scale Readings: a, b, c, d and (1), (2), (3), (4), ..... (n) in decimals of (r = 1 foot).	Rod intervals A in feet, and Scale intervals in dec. (r = 1 foot)	Collimation C. Line of fall i. to 0 of rod Elevation of D, E. Radius R. Alt in feet.	READINGS OF VERNIERS. A, B, C, D, E. Degrees. Minutes	NOTES, COMPUTATIONS. Etc.	SKETCHES AND COMPUTATIONS.
SIGHT From St. 50 To Rod G At 26	2.50146 a .49528	.00628	11 05061 - 4.71295 + 6 33766	15 55	Point 16 at N.W. corner farm house	$  \begin{array}{r}  0.50146 \\  - 0.49925 \\  \hline  + 0.00221 \\  \hline  1990.82 \\  .00221 \\  \hline  1990.821 \\  399382 \\  399382 \\  \hline  + 441295.01 \\  \hline  471295  \end{array}  $ $  \begin{array}{r}  AD = 22.54 \\  6.26 \\  \hline  6980 \\  3120 \\  \hline  980  \end{array}  $ $  \begin{array}{r}  100628 \\  1996.81  \end{array}  $
SIGHT From St. 50 To Rod F At 17	A 1.005 B { 6.912 6.906	5.901	11 05061 + 4 24261	25 10	17 on plate in brook W.S. = (0.25 + 0.114) = = 0.364 ft below at elevation 5.7662	$  \begin{array}{r}  B.S. 10 = 903.52 \\  B.S. 11 = 903.68 \\  \hline  899.20 \\  \hline  \text{Mean B.S.} = 903.60 \quad \text{Cor for Cur. N.W.} - \frac{B}{2} = 0.01855 \\  F.S. = 595.00 \quad \text{Do.} - \frac{60}{2} = 0.0075 \\  \hline  \text{Difference} = 0.01122  \end{array}  $ $  \begin{array}{r}  434161 = F_0 \\  - 213037 = \text{Rev. (corrected)} \\  \hline  221124 \\  36400 \\  \hline  376537 = \text{fin. water surface}  \end{array}  $ $  \begin{array}{r}  11 05061 \\  6999 \\  \hline  + 44261  \end{array}  $
SIGHT From St. 50 To Rod G At 18	A 0.0000 B 9.975	9.975	9.975 897.5	32 12	18 on west side of brook - Bridge	
SIGHT From St. 50 To Rod H At 19	A 0.0000 B 10.196	10.196	10.196 1019.6	34 27	19 on west side of brook. 15' wide 2 1/2 ft. deep	



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## SPECIAL APPENDIX "B."

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PUBLIC WORKS OF CANADA  
**SHIP CHANNEL, RIVER ST. LAWRENCE**  
 BETWEEN  
**MONTREAL AND QUEBEC**  
 MINIMUM WIDTH 300 FT.  
 NOVEMBER 1897

Hon. J. J. TARDY, Minister of Public Works  
 A. GOSSEL, Deputy Minister, Chief Cost Engineer  
 F. W. COVILL, Hydrographic Engineer

Place at which dredging has been done  
 or is required

Place at which dredging has been done  
 or is required



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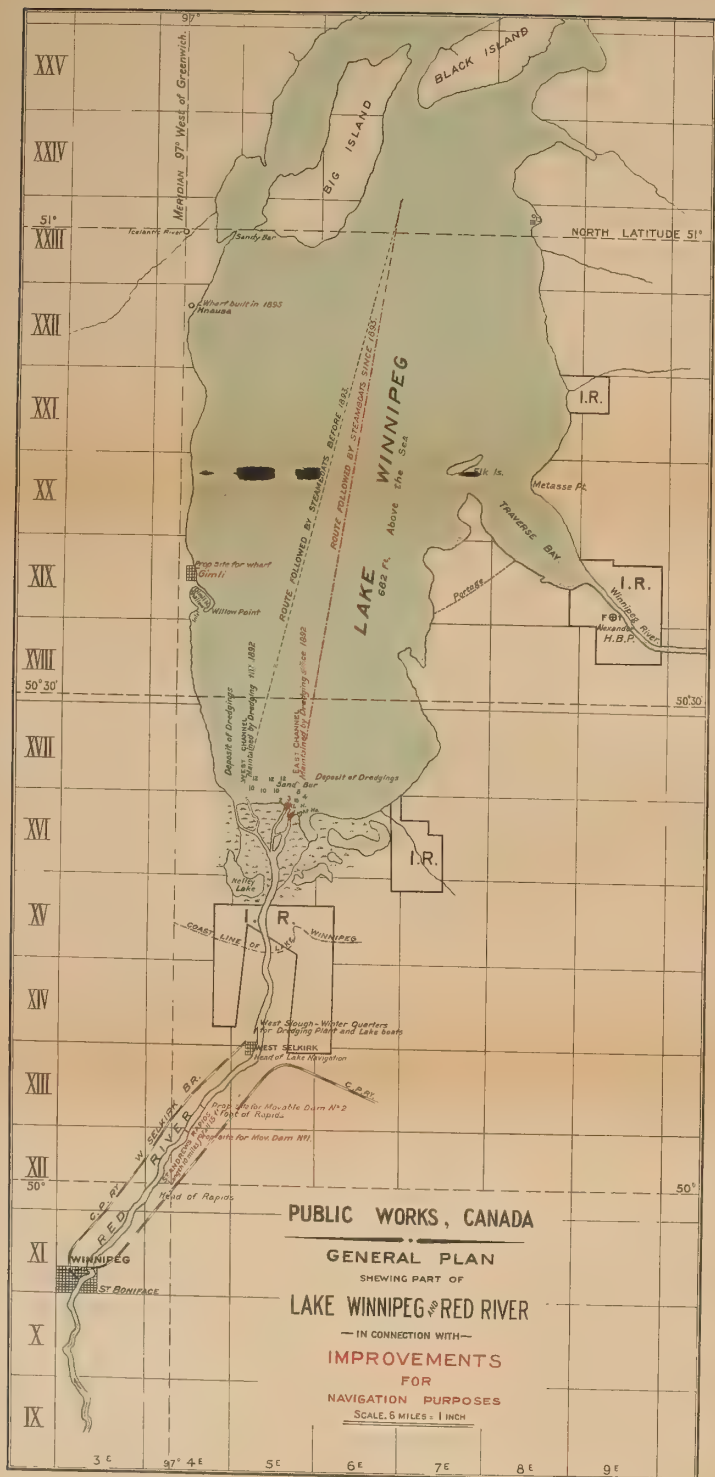
CHIEF ENGINEER'S REPORT.

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**ILL. S.**

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# Report, Minister of Public Works, Canada, 1897-98.

CHIEF ENGINEER'S REPORT.

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**ILL. W.**

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